OCTOBER 1993 Vol.11 No.8 £2.95 Hfl 14.50

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Find out what's in store as the cult TV programme comes to your Acorn screen

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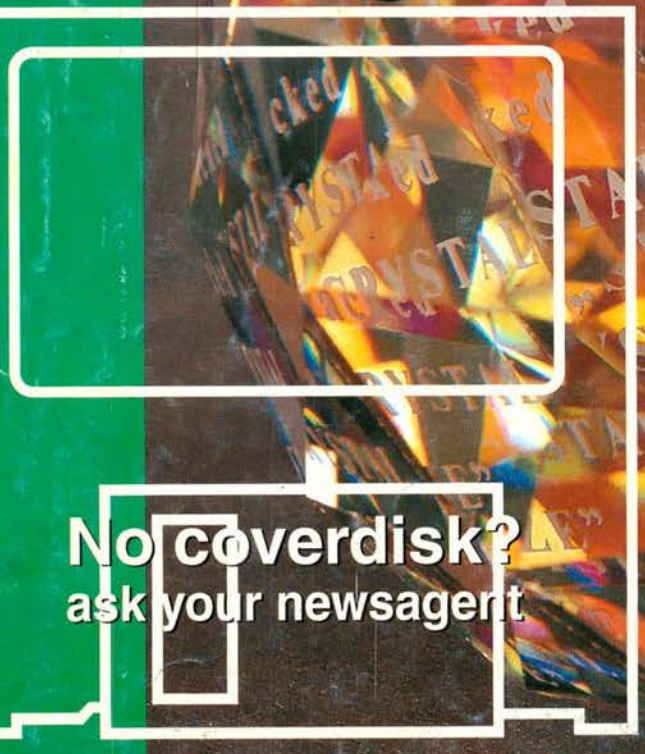

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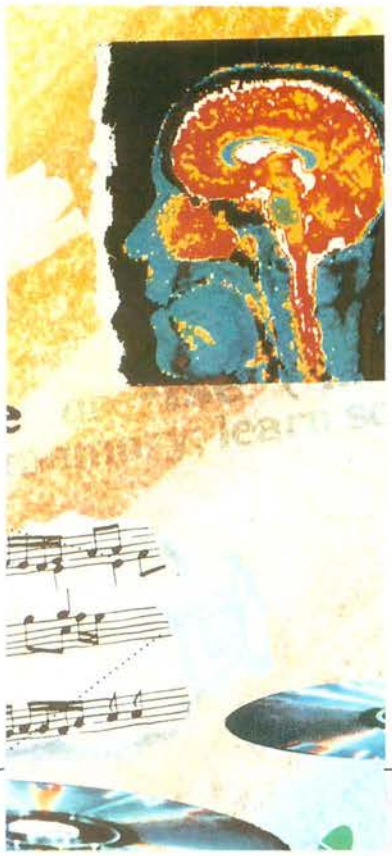
SEQUENCING FOR BEGINNERS • COMMS – ALL YOU NEED TO KNOW • HINTS & TIPS • NEWS



Using the Acorn Replay Do-It-Yourself kit, you can take sounds and moving images from any video source (VCR, camcorder etc) and put them straight onto your hard disc. This means live action, tailored to your needs, can be included alongside text and still images for teaching materials, demonstrations, science experiments and classroom projects.
Developed in association with Acorn Computers Limited the kit is a complete package containing:

- *Specially designed expansion card that captures full colour video and stereo audio to hard disc in real-time.*
- *Simple-to-use !Replay DIY software, which records and monitors video from the desktop.*
- *Resources from Acorn to compress and play Replay software movies.*

All you need, in fact, to make Replay movies!

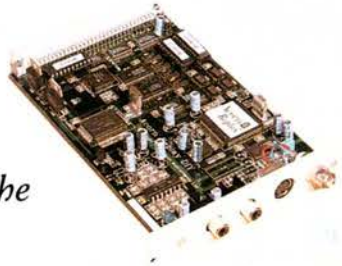
With the Acorn Replay DIY kit you can make information come to life

Kits are available from us today at the surprisingly low cost of £250! So now anyone can get their ideas moving.*

Acorn Replay™

Please note: To record and compress video with the kit you will need an A5000 or A540 with 4Mb RAM. Other computers may be able to use the kit providing they have IDE or SCSI hard discs and ARM3. Compressed movies will play back on any RISC OS computer without requiring additional hardware.

Irlam Instruments design imaging products for RISC OS computers, including colour flat-bed scanner software and high performance real-time video digitisers. So, for the complete picture contact:



**Price excludes VAT and delivery. The Acorn Replay logo is a trademark of Acorn and used under licence.*

IRLAM INSTRUMENTS LTD, BRUNEL INSTITUTE FOR BIOENGINEERING, BRUNEL UNIVERSITY, UXBRIDGE, MIDDLESEX, UB8 3PH. TEL/FAX (0895) 811401

STEP UP TO EUREKA v.2 AND SAVE OVER £40

EUREKA brought the power and innovative features of the very latest in easy-to-use spreadsheet technology to all RISC OS users. And now EUREKA version 2 has even more to offer you:

In fact, there are over 100 individual improvements upon version 1, including extended documentation and a fully comprehensive index.

What's new in Eureka version 2

- Scale printing of worksheets and print-to-fit a single page
- Worksheet zoom in and out
- Display (and print) formulas
- Worksheet find and replace
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- Palette editor - allows any possible colour to be used in a worksheet or chart
- Eureka macrosheets
- Complete macro language for creating custom worksheet functions
- User definable page breaks and set print titles - for large worksheets
- Function key strip
- Chart series editor for direct editing of data series
- Automatic line of best fit for scatter charts
- Display / hide points on scatter charts
- Charting of multiple selections
- Save a selection as a worksheet, Lotus 123 file, CSV, SID or drawfile

If you already use another RISC OS spreadsheet, here's an offer you just can't refuse !

Just tell us what it is, and where and when you bought it, and we'll supply you with a full copy of EUREKA version 2 at the unrepeatable special offer price of £82.10 (£99.99 including p&p and VAT). That's a saving of over £40 on the RRP.

But remember, this very special launch offer must end on the 17th of September, 1993, and definitely will not be repeated. Don't be disappointed, claim your own copy of EUREKA version 2 today !

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Eureka will run on any RISC OS machine with at least 2MB of RAM. RISC OS 3.1 recommend.

more news from Colton Software

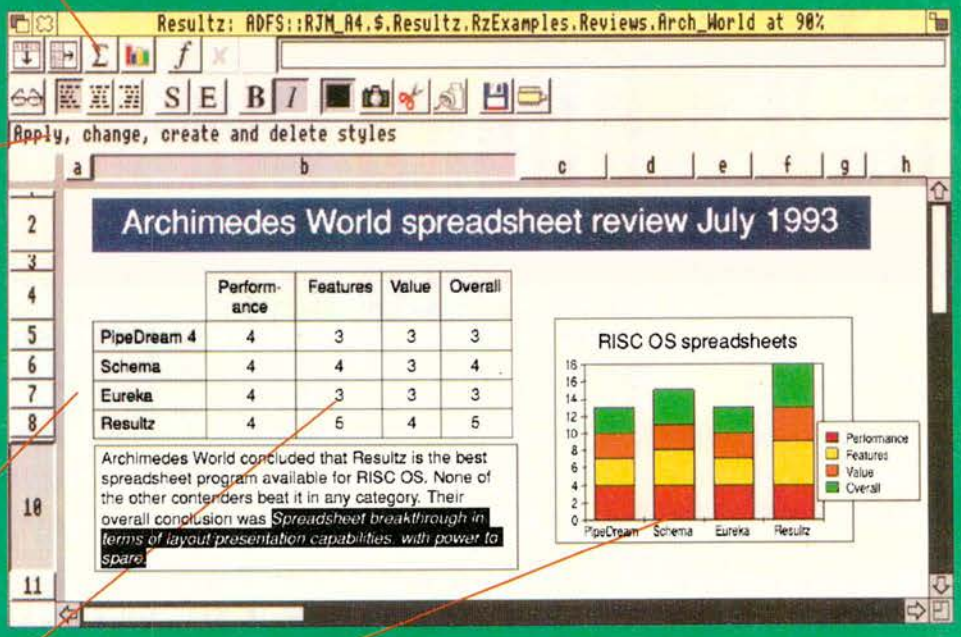
New from the Archimedes' spreadsheet experts comes Resultz, the ultimate spreadsheet for RISC OS.

It's packed with powerful features to help you work fast, whether you're working on a classroom project or managing your business.

It recalculates faster than any competitor, and uses background recalculation so that you're never waiting for the computer to catch up. It will automate your work with the *Fill* and *Autosum buttons* - just select a group of numbers and Resultz writes a formula which adds them up automatically.

Resultz isn't just for power users. It's designed to help novice users work productively. Interactive help makes it easy to use Resultz' comprehensive set of functions. Every time you pick one of the 190 built-in functions from the selector, *tips on using it appear on screen.*

Your data will look better than ever, with colourful charts incorporating your own pictures. Unlike other spreadsheets, Resultz shows your pages on screen, so what you see on screen is exactly what will print out on the page (we call it *spreadsheet DTP*). The style editor places fonts and formats at your fingertips. It's easy to build *tables* and *forms*, and to add *charts* or *pictures* to worksheets.



And Resultz is just £119+VAT.

Resultz and Wordz are the first members of the FireWorkz suite of programs, designed to share the same intuitive easy-to-use interface, and to make it easy to share data between word processor, database and spreadsheet. . .

resultz

. ..when you need Resultz, send for your free brochure and demo disc

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address

COLTON software

2 Signet Court, Swanns Road,
Cambridge CB5 8LA
Telephone 0223 311881
Fax 0223 312010

The Crystal Maze

You've watched the TV programme now play the game. We preview the zones ready to set your fingers twitching as you opt for a mental, skill, physical or mystery challenge. See Page 88.

Britain's best Acorn cover disk contains hours of fun and a host of useful utilities linked to our editorial features to make the magazine come alive on your desktop!

Full details about the packed MegaDisk – see Page 6.

REGULARS

Comment 17
Steve Turnbull asks: Is the computer our friend and companion or just another piece of machinery?

News 19
All the latest news of products and events taking place in the fast changing world of the Acorn computer.

Graphics 46
Band wagon? What band wagon? Mike Goldberg shows how to create your own Jurassic inhabitants.

Public Domain 57
Teri Paul is back again with her pick of public domain and shareware programs to enhance your computer.

Problem Solved 67
Our technical editor opens his mail and shares the secrets behind some of those tricky problems.

Body Building 105
With his head still in the stars, Mike Cook explores the workings of the computer-guided telescope.

Mad Hatter 108
Our adventure wizard guides your through The Price of Magik and Fish and there's more news for Elitists.

Letters 112
This is your opportunity to voice news, ideas and views on the Acorn world – from viruses to joysticks.

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Check out what's in store for you this month on the best cover disk around for the Acorn 32-bit range.

Imagery Tutorial 10
How to make the most of the superb art package, given away free on last month's MegaDisk.

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The ins and outs of communications via the serial port, modem and telephone line.

BBC Disk 70
Full details on what's on the subscription disk for the 8-bit BBC Micro this month, and how to use it.

Essential Paint 73
Once you've produced textile designs, what next? Steve Bruntlett explores the processes involved.

Essential Music 77
What happens when you link a synthesiser to a 32-bit Acorn computer? Ian Waugh looks at the basics.

REVIEWS

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Two *plug in and go* machines are available for schools – the A4000S and the Discovery system.

Learning Curve 33
The latest in educational software for the Acorn: ArtSchool • Darryl the Dragon • Optima

Mapping 40
Do latest releases Clare's Topographer and Topologika's Navigator complement each other?

Empire 49
PCs and Macs can show movies on the desktop but how does the Acorn 32-bit equivalent stand up?

Games 81
All systems go as we look at the latest for 8 and 32-bit Acorn machines:
Quark • The Dungeon • Play it again Sam 18 • Demon's Lair • Quad.

Spex 91
Would you know how to go about designing your very own bungalow? Perhaps you need Spex. We investigate ExPLAN's CAD package.

StrongEd 94
Programmers need a good text editor. Now that StrongEd has ventured into the commercial sphere, is it set to become the standard?

NEXT MONTH – TWO MEGADISKS

We've followed the emergence of the Crystal Maze. Next month in *Acorn Computing* you can see it for yourself as we review the finished game and you can venture into the Aztec Zone on the MegaDisk.

Plus: See how GamesWare and QD have converted the biggest fish of them all, James Pond II – RoboCod, to the Acorn by playing two levels for yourself.

Plus: A special version of Morpheus. You can read what our experts think of this first commercial morphing package and try it out on the MegaDisk.

Plus: A 32-page supplement which isn't to be missed.

All for £3.95 so make sure your get your very own copy of *Acorn Computing* next month.

October subscription disks

This month's exclusive *Acorn Computing* subscriber-only disks features an excellent selection of quality software.

The Archimedes disk contains:
- Worz – a special version of Colton's wordprocessor
- A variation on *Acorn Computing*'s own theme tune
- All the 8-bit listings
- Plus other great PD software

The BBC Micro disk contains:
- A game of horse racing against the odds
- Tricky horizontally scrolling shoot-'em-up
- Improved data compression for your floppies

• The editorial and many of the adverts in this magazine were prepared using Impresssion and ArtWorks by Computer Concepts.

GET YOUR NEWSAGENT TO RESERVE A COPY – SEE PAGE 38

The MegaDisk

WANT ANOTHER DISK?

If you subscribe to *Acorn Computing* you receive a second disk each issue. On this month's disk:

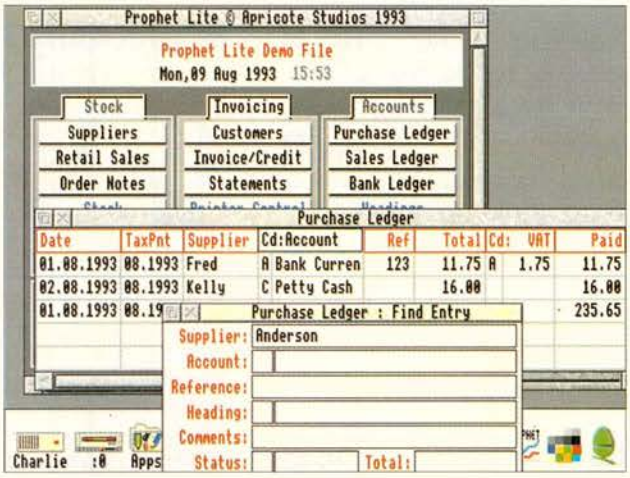
- Wordz demo from Colton Software
- Black Hole
- The 8-bit listings
- Reviews index
- Loads of PD software

See page 38 for further details on how to get your subscription to *Acorn Computing* and the extra disk.

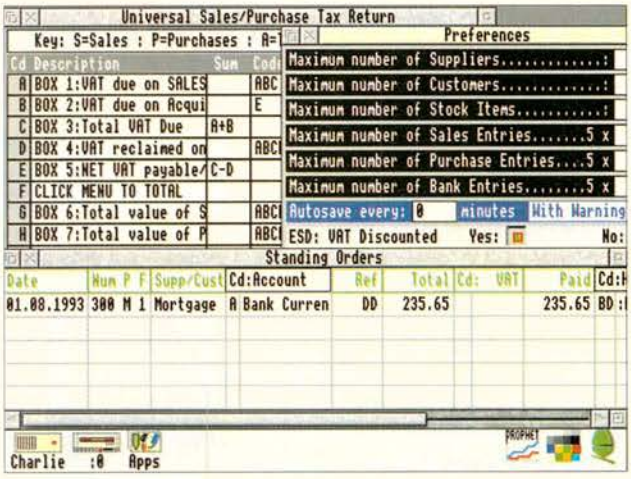
Prophet Lite: Accounting for all

PROPHET Lite has been produced especially for *Acorn Computing* by Apricote Studios (0354 680432).

It is a little *lite* because you cannot print or use the data transfer facilities, the final accounts/profit loss sections and the stock control/suppliers sections. However you can load, edit, save and re-load files as many times as you like. You can enter real data and add and update it as you would when using the full version.



● *The find utility is useful for business and home users*



● *Keep a track of your standing orders with Prophet Lite*

Prophet is somewhat different to the *average* accounts program which is usually a double-entry system. Rather than opening an account for each aspect of your business or personal accounts, Prophet uses analysis headings which show you at a glance exactly how you are doing.

You can view, edit reports on any aspect of your accounts whenever you want and for any period. By utilising Prophet's user-definable analysis headings you will also be able to see an instant up-to-date summary of your available cash at the click of an icon.

The MegaDisk includes a text file including information on how to use Prophet Lite as well as explaining some common accounting terms and jargon and providing a tutorial to work through.

Major keyboard shortcuts:

Control+A	Select Calculator
Control+C	Copy previous record/entry (if current blank)
Control+D	Deletes current entry
Control+F	Opens search/find windows
Control+I	Selects current invoice from customer record or existing invoice
Control+K	Deletes whole page of entries – five
Control+Q	Select Main Menu
Control+R	Replaces/undoes last copy/delete/replace
Control+S	Swap case of character at cursor
Control+U	Delete field contents
Control+V	Paste field above current field into current field (all ledgers)

Getting started with the MegaDisk

THE programs on this disk are stored in a highly compressed format which sometimes enables as much as 1.6Mb of programs and data to be stored on a 800k floppy disk

The procedure for running the programs is very straightforward and does not require learning any special methods or techniques.

Switch on your Acorn micro, put the disk in the drive and click the drive icon. Now double-click !ACmenu – there's a short pause while it scans the archive then it displays a window of the contents.

You can treat this new window like any other one for viewing disk contents, you can run programs and open directories by double-clicking them.

Large programs must be unpacked by dragging on to a separate disk before being run. Some may have an !Install program that will do it for you.

We recommend that you always read the !ReadMe files or access the help information via the Help button.

Cyborg: Futuristic adventure

ALPINE Software (0762 342510) have been writing adventures and arcade challenges for many years as well as encouraging you to create your own with their ALPS and Games Creator programs. They have now written a special version of Cyborg especially for readers of *Acorn Computing*.

The aim of is to escape from the dungeon by collecting four Xylenium crystals. As each one is collected a crystal indicator above the door at the far right of the level lights up. Although troopers will attempt to cut short your visit, avoid shooting the Friendly Green Aliens as they have a powerful ally – the credit allocator. When all four lights are on click the switch beside the door and you're free.

This version of Cyborg tests your arcade skills and your standard weapon is a GC152L laser aimed by moving the sight with the mouse. Move as far as possible to the left or right to scroll the screen.

As you play you may be able to pick up other weapons. To fire these click the Menu button until the right-hand indicator lights up beside the weapon's icon – a weapon is available if the left-hand light beside it is lit.

Picking up weapons, energy pods and crystals as well as pressing switches are all achieved by your tractor beam. Just click Adjust, aim and Select – clicking Adjust a second time turns the beam off.

● *Secrets are everywhere in this part of the Cyborg challenge*

SpySnatcher: Adventuring in a secret world

IF YOU have a penchant for puns, a bent for investigation and a love of adventure Topologika (0733 244682) have compiled you a special version of their superb text adventure. You will be lured into taking on the might of MI7 and investigate Z – otherwise known as the Chief, Sir Arthur Cayley – and his secretary Miss Pell to find the mole. But beware the life of an undercover agent is fraught with danger and time is against you.

This version will take you into the depths of MI7 HQ but to bring the culprits to book and prove that economy of the truth is dangerous you'll need the full version of the game available directly from Topologika for only £15.

If you get stuck, an online help is available to answer questions such as *What do I use the .... for?*. To help you on your way take a good luck at the safe, bearing on mind a certain Christmas song as well have some mathematical knowhow. Do you know what a Lemniscate is? Luckily the program does.

Minefield: Toe the line to freedom

IN A covert operation, enemy forces have strategically placed land mines to block key supply routes. You upon you to establish a safe path between the front line and supply depot – and time is strictly limited.

All you have are three state-of-the-art droids, three shells and an electronic mapping device to aid you. The supply depot is depicted by a cross on the map – additional information only becomes available as you proceed about the task.

You can only operate one droid at a time and which is moved by clicking on a square adjacent to its current location. Squares turn from yellow to grey as they are moved over, showing that they are safe. If a mine is directly encountered the droid will be destroyed.

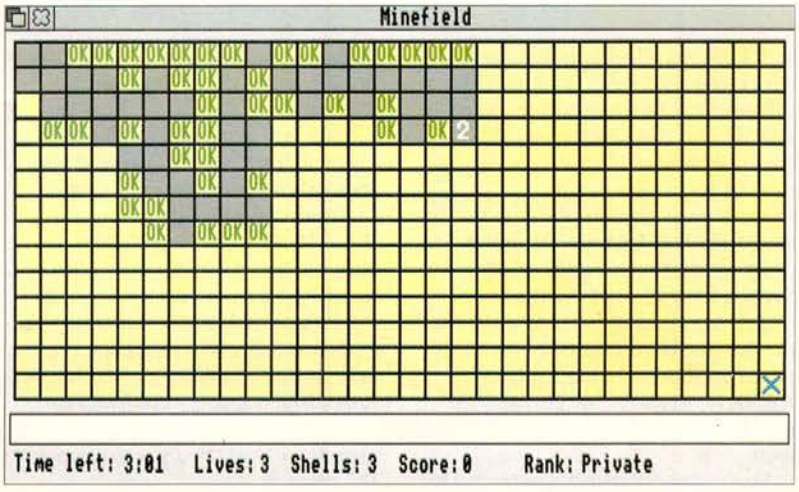
The droids are equipped with sensors able to detect the number of mines immediately adjacent in all directions to the current location. If any exist, the number is relayed to the relevant map square, otherwise the adjoining yellow squares are marked with a green *ok* symbol. Unfortunately, you can't tell exactly which of the squares contain the mines so you'll have to use some deduction.

Right clicking on a yellow square causes the picture to cycle between a bomb symbol, a red *ok* sign and the blank square. These can be used to help you note where you think the mines are.

To prevent accidents, you are unable to move to a square currently marked with a bomb. Should you feel there is no obvious route remaining with time running out, you may choose to fire your shells to destroy some of those mines blocking your path.

If you manage successfully to clear a path through the current field, one point is awarded for each second of time remaining. On the next assignment time becomes more limited with an increased number of mines to avoid. A bonus droid is awarded at 600 points.

Matthew Chilton



● *Keep a cool head as you try to disarm the area*

FAULTY DISK?

If your cover disk has a physical fault – doughnut won't rotate in the sleeve, disk errors and so on – please return it for replacement to:

PC Wise Ltd
Dowlais Top
Business Park
Dowlais
Merthyr Tydfil
Mid Glamorgan
CF48 2YY

Subscription disks should be sent to:

Eropress Direct
FREEPOST
Ellesmere Port
L65 3EB

If there seems to be a fault with one of the programs please contact us by post describing your machine set-up and exactly what happens when you run the program.

Wanna sell some software?

ACORN COMPUTING is always in the market for good quality applications, utilities and games to put on the MegaDisk and Subscription disk, for 32-bit and 8-bit machines. If you think your program has got what it takes just send it on disk to:

MegaDisk Submissions,
Acorn Computing,
Europa House,
Adlington Park,
Macclesfield SK10 4NP.

!Broadcast: Talking to your wimp programs

BROADCAST is a desktop utility which allows you to send any wimp message to any or all running tasks. This is mainly of use to programmers for the purposes of debugging wimp applications during development, as specific situations can be simulated, allowing you to see how exactly the program being tested reacts.

Double-click the application as usual to install it on the iconbar. The program menu consists of three entries – Info, Pointer Info, and Quit. *Pointer Info* opens up a small window, which shows the task and window handles – given in hexadecimal – of the window under the pointer at any time.

In the main window the nine writable icons in the centre of the window are used to store the message block – the numbers to left of them show which word in the block each icon represents. The radio buttons on the right are used to indicate to the program whether the data contained is textual or numeric and must be selected correctly.

A smaller writable icon labelled *R0* is used to enter the reason code of the operation to be performed. For example, *User_Message* is code 17 and *User_Message_Recorded* 18. The *Clear* icon removes any values from the message block above, while *Send* transmits the message as set up.

The last set of icons control where the message is sent to. If the Broadcast radio is selected, the message will be passed around all the currently running tasks. If the *Task Handle* radio is selected, the message will be sent to a specific task.

The task handle of the destination must be entered in the writable icon on the right of the radio buttons and it can be discovered using the Pointer Info window as described above. A window handle may be placed in this icon, and the message will be sent to the task owning the window.

All values are assumed to be in decimal in the main window, unless preceded by & or %. These signify hexadecimal and binary notation respectively. It is important to include the & when entering task and window handles into the icons, unless of course you know the decimal equivalent. Values in the Pointer Info window are always given in hex.

David Bradshaw

COMING NEXT MONTH ON A MEGADISK NEAR YOU

The November issue of *Acorn Computing* will feature **TWO MegaDisks** and will contain some of the very best software around including:

The Crystal Maze

Enter the Aztec Zone in this exclusive level

Morpheus

The changing face of graphics manipulation and much more.

ResFiler: Easy route to applications

FAKE Resources Filer is an application designed to give RISC OS 2 users the convenience of selecting their favourite applications just by clicking on an icon on the icon bar. It is modelled on the RISC OS 3 Resources Filer – and will run on RISC OS 3 machines as well.

It differs in that you can choose any applications to place in the window, which may prove more useful than the normal !Alarm, !Calc, !Chars, !Configure and so on.

The program can be loaded by double-clicking on its icon in the directory or more usefully in the computer's boot sequence – provided you have a hard disk or network.

Clicking on the icon opens up the Resources Applications window which looks very much like a directory window, if the window was already open then it will be brought to the front of the desktop. Up to eight icons will be displayed along with their filenames. Double-clicking on an icon will load that application.

To access the programs other facilities you need to click menu over either the Resources Applications window or the program icon. This will bring up the following menu:

```
Info =>
Application paths
Save settings
Quit
```

The Application Paths option displays a window showing the file paths of each program. The paths can be entered by hand or by dragging an application on to the chosen box – dragging a file from another program's save box will not work, and is appropriately trapped.

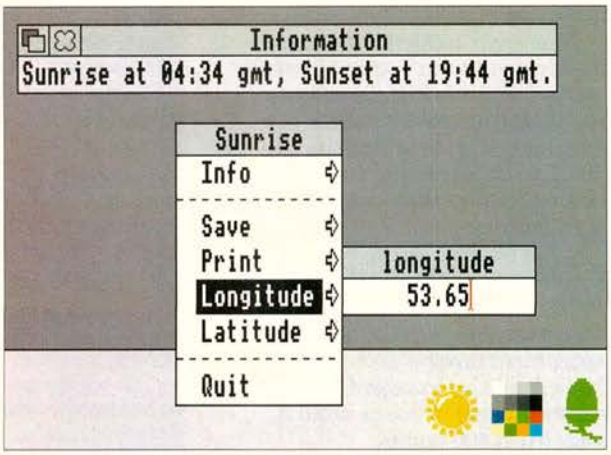
A Remove button blanks the box to its left. The new icons will not appear in the Resources Applications window until the *Reboot the above applications to get hold of their sprites* button is pressed.

After a few seconds the window will update, any file errors will be reported as they are found. The chosen applications must have sprites or an error will be generated, although a !Boot file is not necessary as the program will load !Sprites if it can't run !Boot.

Next time the program is loaded the saved settings file will be loaded and all of the programs will be booted.

Roger Wylde

Sunrise: Watching the daylight hours



● *Now you'll always know when the sun rises*

SUNRISE is a short application – which requires RISC OS 3.1 – that informs you of the times the sun will set and rise relative to GMT – Greenwich Mean Time – on the date held in your micro.

Enter your chosen place by its longitude and latitude using the program menu and click on the Sunrise icon to discover the times. Negative values of latitude are used for the northern hemisphere, while positives represent the south. Similarly, negative longitudes refer to the east and positives the west.

The range of latitudes accepted by the program does not span the full 90 degrees from the equator: The polar regions don't have daily sunrises or sunsets.

Date referencing is required because the hours of sunlight vary throughout the year – the simplest method of temporarily changing the date is by running !Alarm, in conjunction with !Sunrise, and using its *Set clock* facility.

The gleaned information can be stored as a text file using the built-in save option enabling you to import it to other applications. With an Epson compatible printer you can also download the information with the print facility.

Craig Beech

Now you can play the No.1 T.V. adventure game

The Crystal Maze

on your Archimedes

See it at the Acorn World Show

The Crystal Maze for the Acorn Archimedes will be launched at the Acorn World Show at Wembley on October 29th., 1993

Price £39.95 (inc VAT)

The Crystal Maze is a Chatsworth Television production for Channel 4 based on ideas by Jacques Antoine © 1990

Sherston Software, Swan Barton, Sherston, Malmesbury, Wilts. SN16 0LH
Tel. 0666 840433 Fax. 0666 840048

Adjusted images

LAST month we presented Imagery and described how to use it to create artwork from scratch.

For non-artists, however, Imagery offers the ability to change existing pictures, for artistic effect or for practical purposes – such as framing a picture or turning a colour picture into a one-colour picture for printing or DTP work.

Use line styles such as NAND and EOR in conjunction with other tools, from creating shapes (circles and so on from the Toolkit) to special effects. These can have stunning results, especially when used in conjunction with an ECF (dot) pattern.

Load a picture of your choice. Pop up the palette by pressing F1 and try the following: Select Paint menu => Line styles, click Adjust on EOR and then click Adjust on ECF1. Select Special menu and click Select on Strip.

Drag a rectangle out around a central area of the picture. Click Adjust if you are not completely satisfied with the position and start again. When you are happy with the rectangle, click Select to fix it in place.

What you should see on screen is something akin to Figure I.

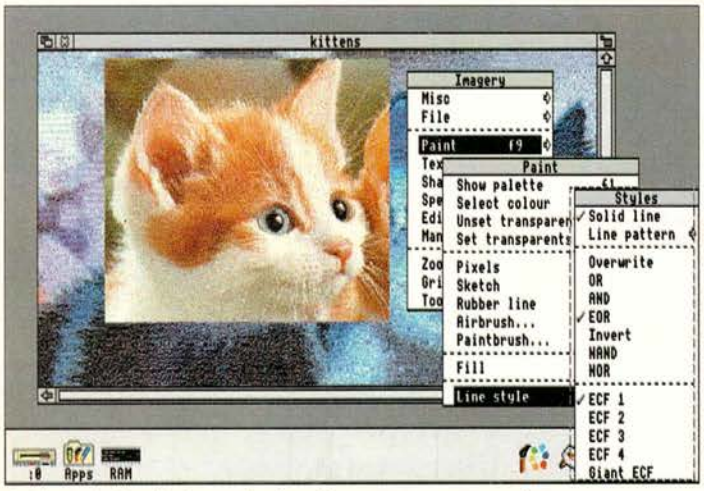
The EOR line style and the ECF pattern have given a textured, coloured (according to your palette choice/picture colour) version of the original as a frame to the rectangular picture you defined.

Cropping is the designer word for cutting out a part of a picture or photograph. Get into the habit of looking at pictures to see what elements are contained within them.

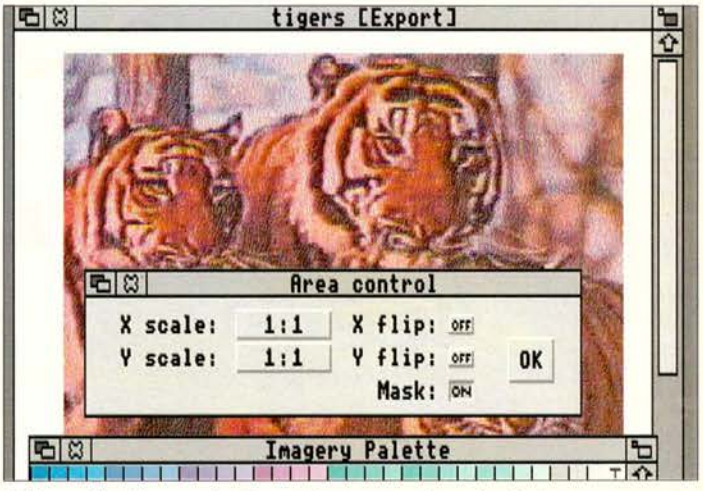
You might not want the whole picture but a bit of it might be just right. You can test your theories about what will look good by resizing the picture window to show only the part needed.

To crop a rectangular area: Bring up the palette with F1, Select Paint menu => Line style, but leave line style as Overwrite. Choose colour for background from palette.

Select Special menu, choose strip,

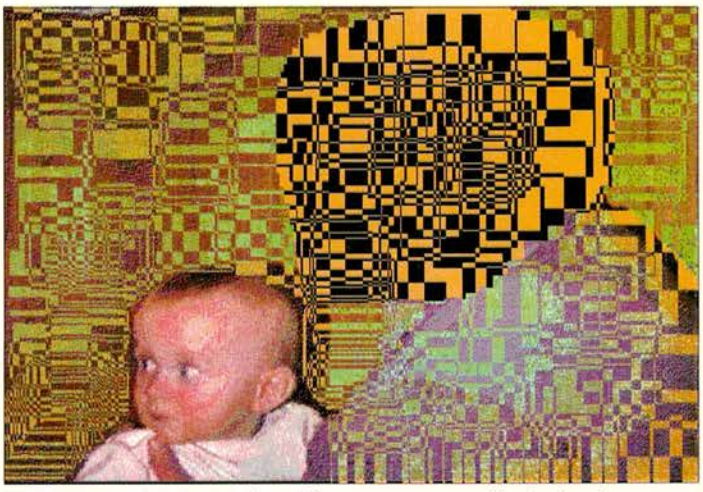


● *Figure I: Overlaying a single colour texture on to a picture*



● *Figure IIa: You can isolate and save a portion of a picture...*

● *Figure IIb: ...and then reload it, scaling up to fill the area*



● *The Line styles menu offers different textures and logical actions*

Mark Webb gives you more advice on making the most of Imagery

select the area to crop from the screen. The cropped area will remain, the rest of the picture will be turned to the background colour, as in Figure IIa.

Set the background to transparent by clicking Adjust in the background then File menu => Export Mask on Save sprite.

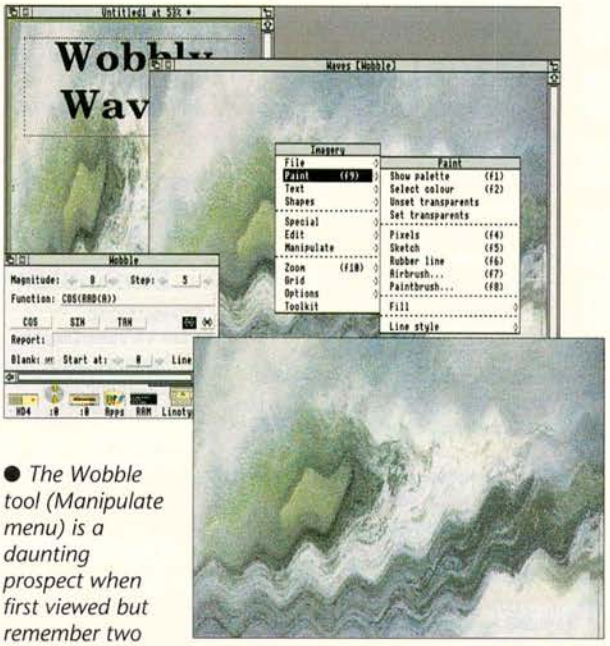
You may now import the sprite on to another background or import it with Auto scale on so that the cropped area is enlarged to fill the picture window, Figure IIb.

Customise

Use Settings in the File menu to customise Imagery for your own way of working. If, for instance, you prefer to start up with the Toolkit displayed, just click Adjust on Toolkit (a tick appears) and then, in the Misc menu, click on Save defaults. The new situation will be saved as a default, or startup, position for next time the program is loaded.

If you edit graduated fills, line patterns, brushes, patterns and so on (more on this in the full manual), the new patterns can be saved by choosing Save settings from the File menu.

Rename the Settings file icon as a reminder of what you are saving (for example RedChess if you have designed some chess pieces) and drag the icon to a Filer window.



● *The Wobble tool (Manipulate menu) is a daunting prospect when first viewed but remember two things: Experiment to your heart's content because there's a preview facility and forget the mathematical stuff and just click on different button combinations until you get the effect you want. Hint: Adjust the Magnitude and Step values at the top of the Wobble box upwards to magnify the effects.*

Creative ideas to get you started

Because Imagery has so many tools and most can easily be used in conjunction, many thousands of creative avenues are available. If you are not an artist but prefer to take existing pictures, scanned or digitised, and enhance them for a particular purpose, often for publication, on paper via DTP or electronically via Genesis, Magpie or another multimedia engine, Imagery can help.

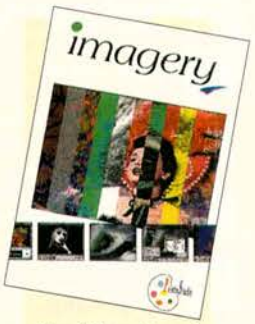
Here are some further creative ideas to set you on the road:

Tinting with text

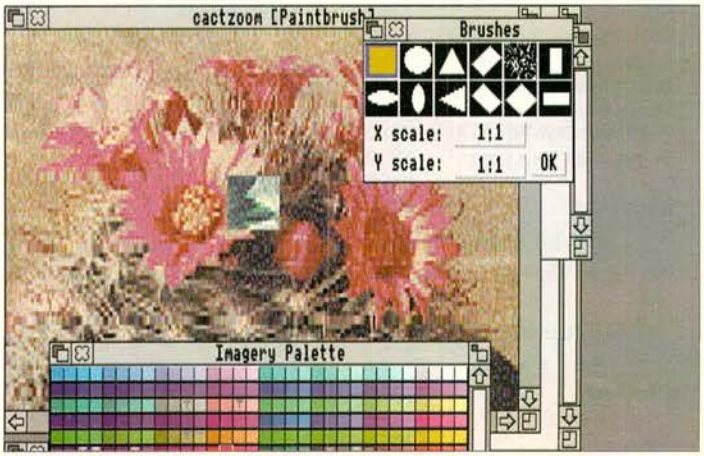
- Use a grey tone scan or digitised picture
- Special menu: Tint area with white to create a box for your text
- Text menu: Choose font and type text into the dialogue box
- Choose white from the palette and size the text appropriately
- Break the text into parts if necessary to get a sensible fit
- Edit menu – Graduated fills: Choose the predefined white graduated fill in the lefthand side of the dialogue box, click on the downward direction arrows, click on Use
- Zoom menu: x2 and OK
- Paint menu: Fill, Graduated fill, 1, Flood fill, OK
- Fill each text character, clicking in the centre of the character at the topmost point
- Misc menu: Enable undo
- Special – Tint area: Choose from the colour palette and drag a rectangle over the whole picture, Undo and choose other colours until happy.

Porthole

- Set line style to EOR and set ECF pattern on (ticked).
- Choose shapes solid circle
- Centre circle over area to act as a porthole on to the picture
- Choose colour from picture for circle colour
- Set circle to porthole size
- Start second circle at same centre point
- Drag circle right over picture and click to fix



The full version of Imagery with tutorial poster and clip art is available from Acorn stockists, priced £89.95.



● *In Imagery you can mask out colours, thus restricting painting and special effects to certain areas*

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Splash, age 7-11	*Sherston*	£19
Splice	*Ace*	£34
Split an Image, age 7-16	*Sherston*	£16
Spoken Word	*Wyddfa*	£16
Spooler	*Computer Tutorial*	£9
Sporting Triangles	*CDS*	£19
SportsDay	*Selective*	£22
SportsPeople	*Selective*	£22
SpriteEd	*Computer Tutorial*	£17
SpySnatcher	*Topologika*	£12
Square Route	*Computer Eyes*	£16
Squirrel	*Digital Services*	£120
Starspell Plus	*Fisher-Marriott*	£19
StartWrite	*Icon*	£55
StockPack	*Topologika*	£37
StoryBook, age 3-10	*EMR*	£59
StrongED	*Stallion*	£22
Studio24Plus Version 2, age 11+	*EMR*	£149
Studio24Plus Version 3, age 12+	*EMR*	£210
Stunt Racer	*Fourth*	£25
SUMthing	*Resource*	£19
SuperDump	*Silicon*	£20
Superior Golf	*Superior*	£14
SuperPlot	*Silicon*	£20
Supersounds	*CIS*	£15
Supersounds 2	*CIS*	£15
Swiv	*Krisalis*	£19
TABS	*ExpLAN*	£95
Talisman	*Minerva*	£8
Talking Pendown	*Longman*	£58
Talking Pictures	*Wyddfa*	£16
Target Maths	*Triple R*	£15
Technodream (Nevryon 2)	*Superior*	£20
TechWriter	*Icon*	£159
Thinklink	*Xavier*	£29
ThinkSheet	*Fisher-Marriott*	£38
Thundermonk	*Minerva*	£11
Tiles	*Brain Games*	£16
Timeshare	*Fisher-Marriott*	£19
Timetabler	*Minerva*	£549
Time Traveller, KS2	*ESM*	£37
– Britain Since the 1930s, KS2		£30
– Expansion, Trade and Industry, KS3		£36
– Making of the United Kingdom,KS3		£39
– Medieval Realms, KS3		£36
– The Victorians, KS2		£30
TinyDraw/TinyPuzzle	*Topologika*	£34
TinyPuzzle	*Topologika*	£24
Titler	*Clares*	£119
Toolkit Plus	*Clares*	£36
Tools Graphics, drawfiles	*Micro Studio*	£23
Topographer	*Clares*	£63
Touch Type	*Iota*	£39
Tower of Babel	*Cygnus*	£17
Trace	*David Pilling*	£5
Tracer	*Midnight*	£46
Tracker	*Leading Edge*	£37
Transport, drawfiles	*Micro Studio*	£25
Turbo Type	*CIS*	£20
Tween	*Ace*	£35
Twin	*Acorn*	£24
Twin World	*UBI Soft*	£14
TWO (Task and Window Organiser)	*ICS*	£10
– site licence		£30
TypeStudio	*RISC*	£39
Utility Disc 1	*Data Store*	£8
Utility Disc 2	*Data Store*	£13
Utility Disc 3	*Data Store*	£7
Utility Collection	*Data Store*	£21
Vector	*4mation*	£75
View»Mac 3	*Human*	£65
– Arc/Mac Cable	*Human*	£24
Viewpoints, age 7-11	*Sherston*	£37
Virtual Golf	*Fourth Dim*	£25
Visual Backup	*Dabhand*	£39
Vox Box	*Clares*	£46
Waiter	*Digital Services*	£35
Waterloo (not OS 3.1)	*Turcan*	£19
Whale Facts	*Topologika*	£34
Wordbank	*Topologika*	£25
Words and Pictures	*Chalksoft*	£18
WordWorks	*CC*	£38
Wordz	*Colton*	£88
World Geography Maps, draw	*Micro Studio*	£23
WorldMaker, KS3,4	*ESM*	£57
World Map Study, KS3,4	*ESM*	£67
Worldscape	*Leading Edge*	£17
World Wildlife, sprites	*Micro Studio*	£16
Worra Battle	*Oak*	£15
WorraCAD	*Oak*	£79
Yacht 2	*Computer Tutorial*	£49
Yacht 7	*Computer Tutorial*	£94
Zarch	*Superior*	£14
Zelanites (not OS 3)	*Micro Power*	£15
Zool	*Gremlin*	£20

HARDWARE

ICS

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I²C PRODUCTS . . .

AnDi Oddule	*Baildon*	£39
I²C Adaptor (needed unless you already have an I²C socket)	*Baildon*	£10
I²C SWI (enhanced IIC_Control)	*Baildon*	£15
– bought with Oddule		£5

SCANNERS, DIGITISERS . . .

ArcScanner including Epson GT-4000	*Clares*	£1660
Colour Converter	*Lindis*	£145
FaxScan	*Spacetech*	£94
GreyHawk	*Wild Visiion*	£98
Handipad	*TechSoft*	£193
Hawk V9 MkII	*Wild Vision*	
– standard		£199
– hardware dithered		£259
HiVision Digitiser Colour	*HCCS*	
– A3000 External		£137
– A3000 Series / A4000 Internal		£124
– A5000 / 300 / 400		£124
iMage (Sharp JX-100)	*Irlam*	
– for A5000		£490
– for other computers		£589
Image Scanner	*Iota*	£383
– Colour Upgrade Kit	*Iota*	£239
– Fast Parallel Card	*Iota*	£98
i-Scan 200	*Irlam*	£539
i-Scan 400	*Irlam*	£589
Pineapple Colour Video Digitiser	*Pineapple*	£195
– A3000 boxed	*Pineapple*	£230
ProImage (Epson GT6000)	*Irlam*	
– for A5000		£989
– for other computers		£1089
Scan-Light A4	*CC*	£277
– with Sheet Feeder	*CC*	£360
Scan-Light 256	*CC*	£190
– A3000 internal	*CC*	£190
Scan-Light Professional	*CC*	£565
– as above + SCSI interface	*CC*	£699
Scan-Light Video	*CC*	£215
SnapShot Colour Video Digitiser	*Lingenuity*	£195
– A3000 version	*Lingenuity*	£275
Spectra	*RISC*	
– A3000 Series / A4000 Internal		£545
– A3000 External		£555
– Archimedes / A5000		£545
Vision Digitiser	*HCCS*	
– A5000 / 300 / 400 Mono		£48
– A5000 / 300 / 400 Colour		£76
– A3000 External Mono		£60
– A3000 External Colour		£89
– A3000 Series /A4000 Internal Mono		£48
– A3000 Series / A4000 Internal Colour		£76

MEMORY . . .

Fitting extra unless otherwise stated
† Fitting fairly easy ‡ Fitting needs expertise

A3000 2 Mb Upgradable †	*Atomwide/IFEL*	£43
A3000 4 Mb †	*Atomwide/IFEL*	£100
A3010 1-2 Mb		£39
A3020 / A4000 2-4 Mb †	*IFEL*	£55
A310 2 Mb Upgradable soldered ‡	*IFEL*	£88
– as above + MEMC1a		£113
– as above + MEMC1a + fitting		£143
A310 4 Mb soldered + MEMC1a ‡	*IFEL*	£152
– as above + fitting		£182
A5000 2-4 Mb †	*Atomwide*	£85
A5000 2-8 Mb including fitting	*Atomwide*	£500
A5000 4-8 Mb including fitting	*Atomwide*	£391
A540 4 Mb †	*Acorn*	£238

PRINTERS . . .

ArcLaser 300-6	*Calligraph*	£895
ArcServer 300-8	*Calligraph*	£985
Bubble Jet BJ-10sx	*Canon*	£187
Bubble Jet BJ-10sx + TurboDriver	*Canon/CC*	£219
Bubble Jet BJ-200	*Canon*	£282
Bubble Jet BJ-230	*Canon*	£315
Bubble Jet BJ-300	*Canon*	£325
Bubble Jet BJ-330	*Canon*	£380

For ordering details please turn to page 3

ICS

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Bubble Jet BJC-800 + TurboDriver	Canon/CC	£1374
DeskJet 510	Hewlett-Packard	£275
DeskJet 500C	Hewlett-Packard	£375
DeskJet 550C	Hewlett-Packard	£525
Laser Direct HiRes4	CC	£899
– 250-sheet Paper Cassette		£99
Laser Direct HiRes8	CC	£1275
Laser Direct HiRes Board	CC	£325
Refill toner cartridge for Canon EPS		£50
New toner cartridge for Canon LBP-4		£59

COMPUTERS . . .

A3010 1MB FD Family Solution	Acorn	£420
A3010 2MB FD Learning Curve with Monitor	Acorn	£675
– as above + JP150 Printer		£889
A3020 2MB FD	Acorn	£749
A3020 2MB HD60	Acorn	£899
A4 2MB FD	Acorn	£1395
A4 4MB HD60	Acorn	£1695
A4 4MB HD120	Acorn	£1799
A4 Extra Battery Pack	Acorn	£50
A4 Shoulder Bag	Acorn	£35
A4000 2MB HD80	Acorn	£945
– as above + Home Office		£995
A5000 2MB HD80 Multiscan	Acorn	£1395
– as above + Learning Curve		£1455
Pocket Book	Acorn	**£169**

MISCELLANEOUS. . .

386 PC Expansion Card 25 MHz	Aleph One	
– 1 Mb		£POA
– 4 Mb		£POA
486 PC Expansion Card	Aleph One	
– 1 Mb		£POA
– 4 Mb		£POA
4-slot 4-layer Backplane	IFEL	£52
A300/400 Fan kit	ICS	£15
A3000 Expansion Box	Wild Vision	£135
A310 RISC OS Carrier Board ‡	IFEL	£18
A5000 Fitting Kit for second hard disc	ICS	£15
Arckey Function KeyStrip Holder	ICS	V0 £3
– pack of 4		V0 £10
ArcNET	ACS	£69
ARM3 ‡	Aleph One/IFEL	£165
Arm_Stick	Arm_Tech	£28
ColourBurst	State	£374
ColourCard	CC	£225
– A3000 External	CC	£225
Dongle Dangle with screw fittings	ICS	£6
Fan filters (pack of 10) (not A5000)	ICS	£6
FaxPack	CC	£289
Floating Point Accelerator (for A5000 + A540)	Acorn	£91
Floppy Discs, 10 × 3½" High Density		£10
G16 True Colour Card	State	£258
G8 Plus Accelerator	State	£238
HiPoint Mouse for A4	Genius	£49
Microlin fx Pocket Fax Modem	Pace	£179
Micro Mouse	Clares	£26
Monitor Stand for A3000	ICS	£21
Mono/SCSI	Atomwide	£48
Podule Case for A3000	HCCS	£16
Printer Port Sampler	Leading Edge	£42
Printer/SCSI	Atomwide	£74
Publishing Pack	CC	£475
RISC OS 3 Upgrade	Acorn	£42
– Bulk package	Acorn	£335
– A5000	Acorn	£20
Seal 'n Type spill-proof Keyboard Covers		
– Archimedes / A5000	Kador	£14
– A3000	Kador	£14
TouchWindow	Lindis	£234
Whisper Fan Quietener (for A300/A400 series only)	ICS	£15
Wizzo IDE Filing System on rom	ICS	
– Wizzo4 for A4		£POA
– **Wizzo5** for A5000		**£29**

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Padlock is our top seller for simple disc security.

"Fontasy offers a wider range of effects than FontFX. It is a package for the perfectionist, whether professional or enthusiast."
NOW ONLY £15

HOW TO ORDER

VAT: Zero-rated items are marked V0. UK customers please add 17.5% to all other prices. EC customers outside the UK (including BFPO) please do the same unless you are VAT registered, in which case quote your international VAT number. Ours is GB 595 7258 84.

CARRIAGE IS FREE WITHIN MAINLAND UK IF YOU PAY ON ORDERING.

Overseas carriage: If you are paying by credit card we will add airmail and insurance at cost. Otherwise please add £6 (Europe) or at least £12 (elsewhere) for each software item and send a pounds sterling bank draft payable at a London clearing bank, or Eurocheques for not more than £100 each.

Credit cards are welcome. We do not charge your account until your order is fulfilled. Your name and address must be as known to the credit card company. If you are leaving an order on our answering machine please include your telephone number, the expiry date of your card, and your calculation of the total payment due. We will make no charge for credit card commission unless we have informed you first.

Official orders are welcome from UK government and educational institutions. Payment is due in 14 days. Invoices are subject to carriage and late payment charges.

Site licences are available for most products. Please check our prices.

All products, prices and specifications are offered in good faith and are subject to change without notice. We process all orders immediately, but suppliers do sometimes keep us waiting. Goods are guaranteed but we do not supply them on approval. Returns and cancellations can only be accepted by prior agreement and there may be a charge to cover the costs involved.

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LICENSED CREDIT BROKER

Tools of the trade

JUST the other day I was talking to a young seven-year-old named Ben, who was quite animated about his games console and the different things he could play. On discovering that I knew something about computers he asked me if I liked them.

I was taken aback by the question because it was something I hadn't heard for years. Back in the early '80s the world was divided into those who "liked computers" which meant someone who owned one, and those who didn't. The former were an unusual breed in an extreme minority.

Nowadays, a games console is considered the same as a computer and there are a lot of them about so the question seemed out of place. After all can anyone actually claim to *like* a collection of silicon chips and wires?

So, after giving a rather inadequate reply to Ben, I began to wonder more and more about *liking* computers. *Did* I like them? After due consideration I came to the conclusion: No, I don't *like* computers – there's no degree of affection whatsoever between me and any of the machines that I use. And I'm sure they don't like me either.

Let's face it, a computer is a tool. It exists to perform a task – just like a spanner. Of course, it's much more versatile than a spanner but it's also a good deal more delicate. Given a choice between a computer and a spanner on a desert island I think I'd go for the spanner every time.

Leaving the desert island to its famous people, we have this simple fact: A computer is a versatile tool. Its limits extend only to the quality of the software and the type of input/output device attached.

So given this description (and with apologies for juvenile innuendo) does anyone like a tool? Does a mechanic like a spanner? An electrical engineer, a wire stripper? Or a milkman his milk float?

Let's try looking at it the other way: What wouldn't a mechanic like about a spanner? He wouldn't like one that's made of a metal that gives way when he applies pressure to it.

An electrical engineer wouldn't like a wire stripper that insisted on cutting the wire core as well as the insulation. And a milkie wouldn't like a float that kept breaking down.

The common factor is the quality of the tool. Any professional worker appreciates tools that do what they're intended to do, and appreciates it all the more if the tool works well and is easy to use.

So what about computers? Being so universal, a computer has to be all things to all people. And a person who uses one, for whatever purpose, will appreciate it if the system (hardware and software combined) can be used to perform the job easily, quickly and accurately.

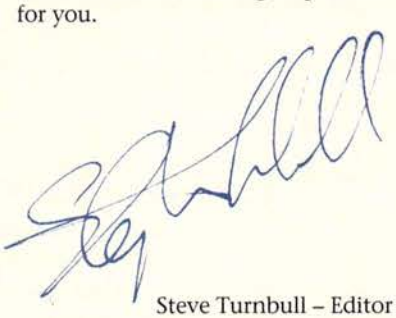
From there we come back to the original question: "Do you like computers?" And as before the answer is, naturally, no. A true professional in the field of computers would never say: "I like PCs" or: "I like Macs" or: "I like Acorns". Because it's meaningless.

What you can say is: "I like what I can *do* with a PC/Mac/Acorn" and from there you can analyse which tool is best for which job. In a computer the *tool* is a combination of things: The base hardware, the operating system and finally the application program. If the hardware cannot do the job, you don't buy that type of computer.

If the operating system makes working with the hardware difficult – or absorbs too much of the basic power of the machine – it's foolish to consider using that operating system. And if there's no application program to suit your needs you can't use that computer anyway.

So when you come to choose, look at all the options available but always consider this: Is there software to do precisely what I want, quickly and easily? Is the machine itself easy to use? Is the hardware up to it, and is it reliable and cheap to maintain?

And don't be blinded by those self-proclaimed experts who always claim to *like* specific systems. Just find out which is the right spanner for you.



Steve Turnbull – Editor

P.S. The *industry-standard* argument is only significant where you require directly compatible file transfer to existing machines – a Trabant is cheap and it's driven by a lot of people but that doesn't make it any good.

When asked if you like computers, what would be your answer? There are many users who would reply No and Steve Turnbull explains why

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ICS WIZZO (it's magic)

051-625 1006

The ideA range

ICS was the first company to offer IDE products for Acorns back in 1990; now they are the standard choice for new Acorn computers. Building on three years' experience we have continually improved our IDE filing system. It now offers the highest level of RISC OS compliance, and compatibility with at least 45 different hard discs tested by us. Can any other supplier make this claim?

Our IDEFS abolishes the RISC OS limit of 512 Mb, and offers extra features such as password protection, background operation, disc partitioning, and power saving (which allows some discs to stop spinning when idle).

Partitions can have different levels of protection. Family or pupils can access some of your files while you keep others safely out of their reach. Or you can simply protect the whole disc (reformatting is not required for this).

Our hard disc upgrade kits are based around two internal interfaces at present: IDEA3IN for the A3000 Series, and IDEARCIN for the A300/A400/A500 Series. All kits are designed to a high standard and include all the parts you will need.

IDEA3IN upgrade kits include an I²C expansion socket as standard. They come with a 2½" disc already attached, and are easy to fit once you have opened up your computer. False rumours have been spread in the past (by sellers of SCSI hard discs) that internal upgrades might not be safe in an A3000. In three years we have never heard of an actual problem, but please ask Acorn's Technical Department if you wish to be reassured.

IDEARCIN upgrade kits provide a fast 16-bit link all the way from the computer to the hard disc. They can even be fitted to an A310 without a backplane – quite a cost saving. A second hard disc can easily be added later if required.

Interfaces and hard discs can also be bought separately. By shopping around you may even save a few pounds. But beware: not all IDE hard discs work with all interfaces, and if you have a problem it may be difficult to decide who should put it right. We recommend buying a complete kit from one source.

WIZZO is the name given to our IDE filing system when it is supplied as a single rom chip. Wizzo5 is for the A5000, and Wizzo4 is for the A4. You should buy a Wizzo if you need password protection or wish to use larger hard discs. (Wizzo4 has been delayed slightly – we are adding a feature to ensure compatibility with possible future A4 upgrades).

A Wizzo rom by itself will only produce a slight speed improvement. If you need speed in an A5000, fit an IDEARCIN interface instead. Up to 60% improvement can then be achieved, but this does depend which hard disc you use so do check with us first.

How to read our ideA product references

A number at the end is the nominal hard disc capacity in megabytes. We usually round this down, so the actual formatted capacity may be higher. All discs have auto-parking. Average access times vary but all are below 20 ms.

All prices shown exclude VAT and are subject to change without notice. The cost to us for hard discs can vary enormously from week to week – not always downwards! Your local dealer can obtain *ideA* products from us or from a distributor.

◗ Archimedes A300/A400/A500 Series Internal Upgrades

Package includes formatted hard disc, ideA interface card, hard disc cradle and fittings, fan kit, replacement multi-purpose LED (power and drive status), manual with fitting instructions. Can be fitted to an A310 without a backplane. If a backplane is used it must be a 4-layer type. Easily fitted by most users.

IDEARCIN 80	£225	IDEARCIN 240	£425
IDEARCIN 100	£255	IDEARCIN 330	£500
IDEARCIN 120	£275	IDEARCIN 426	£575
IDEARCIN 170	£305	IDEARCIN 540	£799

◗ A3000 Series Fully Internal Upgrades

Package includes formatted hard disc mounted on ideA interface card, manual with fitting instructions. Fully internal, using internal expansion slot. Co-exists with floppy drive and memory upgrades. Fits the new 1992 computers. Easily fitted subject to Acorn warranty stipulations.

IDEA3IN 40	£225	IDEA3IN 120	£350
IDEA3IN 60	£275	IDEA3IN 130	£450
IDEA3IN 80	£325	IDEA3IN 209	£499
A3000 FAN KIT (not usually required*)			£19

**Only required if the computer has been fully upgraded, e.g. with maximum memory AND Econet AND an external podule.*

◗ Separates for hard disc upgrades

We can only guarantee the performance of ideA interface cards with hard discs we have tested ourselves, so please check if in doubt. If you are buying a hard disc for an A5000 please say so. If you intend to fit the disc in addition to an existing one we need to know the make and model of the existing disc. Acorn's interface does not support all makes of disc, and some models will work as a second disc but not on their own.

Hard discs on their own are listed as, for example, IDEA 80. An S at the end indicates a 2½" disc.

IDEARCIN (Archimedes Interface for Internal disc(s))	£60
IDEA3IN (A3000 Interface for Internal disc)	£75
ARCHIMEDES INTERNAL CRADLE KIT	£15
ARCHIMEDES A300 / A400 SERIES FAN KIT	£15
4-SLOT 4-LAYER BACKPLANE	£52
POWER CABLE FOR SECOND HARD DISC	£5
A5000 SECOND HARD DISC FITTING KIT	£15

IDEA80	£179	IDEA240	£350
IDEA100	£215	IDEA330	£470
IDEA120	£245	IDEA426	£499
IDEA170	£275	IDEA540	£750
IDEA40S	£140	IDEA120S	£299
IDEA60S	£200	IDEA130S	£399
IDEA80S	£245	IDEA209S	£449

◗ WIZZO IDE Filing System on rom

Package includes rom, manual and fitting instructions. Compatible with RISC OS 3.0 and 3.1. Allows up to four logical partitions over two physical drives. Each partition appears separately on the icon bar and can have different password protection. Makes use of existing Acorn hardware for maximum compatibility, but works with a wider range of hard discs. Security breaches using ADFS can be prevented. Can be fitted easily by a competent user.

Available now: WIZZO5 for A5000	*introductory price* £29
Available soon: WIZZO4 for A4	*introductory price* £29

Quantity discounts available • Dealer enquiries welcome

ICS (Ian Computers Limited), Dept AC12, 1 Kingston road, WIRRAL, Merseyside, L48 5ET

Zool winners

FROM the massive response we had to Gremlin's Zool competition there could sadly be only six winners. First was David Randall from Mickleover near Derby. He is now the proud owner of a copy of Zool, a T-shirt, poster, tub of Chupa Chups lollies, a basket of fruit, portable CD player, Meccano set, two tickets to Alton Towers and a DIY manual.

For the following five lucky runners up there is a copy of the game with a T-shirt and poster each: Craig Duncan, Eastleigh; Richard Milne, Durham; Philip Allison, Reading; Allan Harris, York and John Laynes from Windermere.

A cross word

FOR crossword enthusiasts XWord is now available for RISC OS machines. Produced by Panda Discs it is their first major multitasking title and allows you to create puzzles of any size featuring automatic grid creation and the ability to drop text files on to puzzles for automatic placing.

An extensive dictionary comes with the program as does automatic formatting of the puzzle which can be output as draw or text files. Contact Panda Discs, Four Seasons, Tinkers Lane, Brewood, Staffs ST19 9DE.

Precise programming

Interested in Pascal? Then take a look at *Pascal Precisely* by Judy Bishop. This book is published by Addison-Wesley (0734 794000), is now in its third edition and costs £18.95.

Alive and kicking

CAMBRIDGE International Software (071-278 5136) have recently opened a European office based in Breda, Holland (010 31 76 214292) and will be exhibiting their latest products at the Big Ben Club Open Day in Hardewijk in October.

Tragic loss

Mark Botterill, co-founder of Impact Posters and later Fourth Dimension – the innovative software house for Acorn-exclusive games – has been trragically killed in a train accident.

The staff at *Acorn Computing* would like to express their condolences to his family.

Game power in store

THIS Christmas Acorn have launched an attack on the High Street. As well as announcing that experienced ARM programmers will be available to help software houses port leading games titles to run on the RISC OS machines, they have appointed CentreSoft to increase their game distribution into the major retail stores.

Furthermore, at a recent meeting some of the major games houses Acorn were encouraging companies to bring their popular titles over to the 32-bit machines. However, scepticism is rife among developers and the big money is made in the console market.

However, Renegade are testing the water this autumn with Magic Pockets and Sensible Soccer followed up by Fire and Ice and Chaos Engine in time for Christmas.

Gremlin, too, are following up the release of Zool with Premier Football Manager also in time for Christmas. If these do well other software publishers will probably try paddling in the shallows too.

● *Magic Pockets: Arcade mayhem*

● *Sensible Soccer: Here we go...*

● *Premier Football Manager: The boy's done good*

Time to spare

SOFT-TEACH Educational (0985 40329) are about to release version three of TimeLines. This time data presentation program fits well into the History National Curriculum and the new version uses the same principle of a timeline linked to a chronological stack of cards. However, there are an additional range of facilities with this fully RISC OS compliant version.

The extras include a sample database for tutorial purposes as well as two extra ones dealing with Key Stage 2 and 3 History Study Units.

Pictures and text created outside TimeLines can be linked to historical events and then printed or exported. A full range of print facilities are also available including continuous, jumbo time lines which was previously only available on an Extra disk.

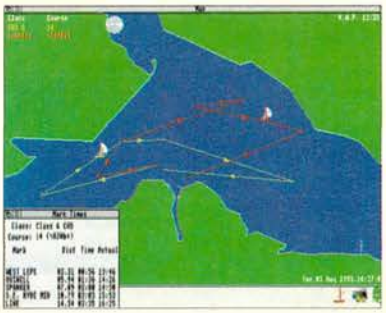
Upgrades from the BBC Micro version start at £45 with upgrades for earlier 32-bit versions beginning at £20. The full price is £90 for Junior, £120 for Middle, £180 for Secondary and £250 for colleges including a school site licence.

All at sea but keeping afloat

ACORN 32-bit machines took on a nautical air when being used to produce the results of this year's Offshore Racing Councils Two-Ton World Championship and the Royal Ocean Racing Clubs Open Regatta.

The latter was held at Cowes on the Isle of Wight during July and an A4000 and A5000 were used to keep detailed results of all races as well as cumulative points to discover the winning yachts.

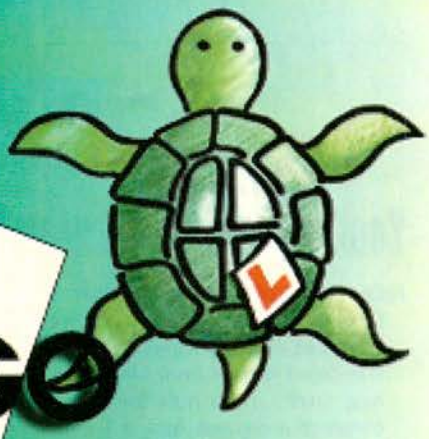
The package was written by Cowes-based Computer Tutorial Services (0983 294333) and was such a success that it was also used during Cowes week in August to assist in choosing courses for the 25 different classes of yachts. The CTS programs gave officials charts of every race with the expected times of arrival.



● *Taking control of the seas at Cowes*

A Beginner's Guide to Logo...

FIRST LOGO

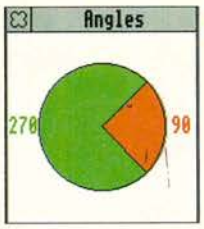


Single User £24.00
Primary Site Licence £72.00
Secondary Site Licence £120.00
excluding VAT

Slates allow easy entry of commands, simply by clicking

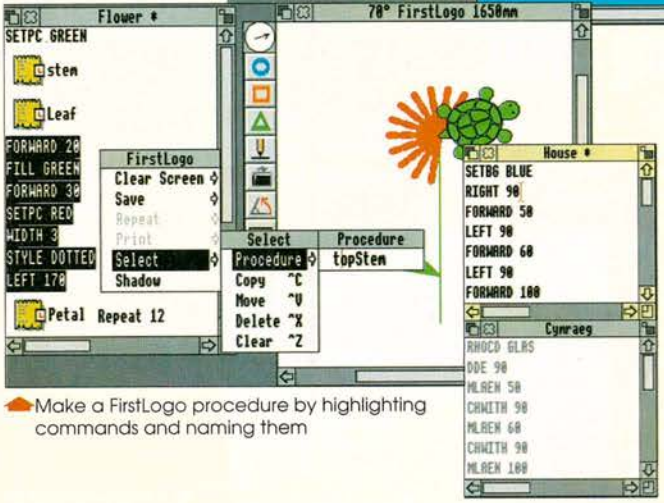
Take the turtle for a journey around town!

A large range of options make FirstLogo easy to configure for specific needs



Just point and click to measure an angle or distance

There are many exciting activities to try, such as this UK based map activity



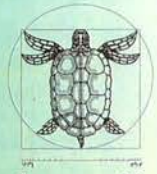
Make a FirstLogo procedure by highlighting commands and naming them

FirstLogo commands can be entered in English, French or Welsh

- Commands are input via the keyboard, slate, or - *using the unique interactive turtle* - dragging the pointer round the screen.
- Standard RISC OS environment for ease of use and familiarity.
- Intuitive and highly visual creation and manipulation of procedures.
- Easily accessible activity based documentation.
- "Tool Kit" for quick drawing of geometric shapes, measurement of work and input of common commands.
- Unique "step" feature allowing commands to be executed one at a time with user-definable delay between each one.
- Simultaneous translation of commands between English, French and Welsh.
- One-to-one match between screen measurements and printed copy.
- FirstLogo doesn't pretend to replace the power and functionality of a full implementation of Logo, but does offer a valuable and unique Logo first step for beginners of all ages.

For further details please contact the sales department at:

Longman Logotron
124 Cambridge Science Park
Cambridge
CB4 4ZS
Tel: (0223) 425558
Fax: (0223) 425349



LONGMAN LOGOTRON

Floating the ARM3

CJE MICROS (0903 213361) have a special deal for those who want to upgrade their machines. An ARM3 with floating point accelerator will cost £199 while the ARM3 with an FPA connector costs £135. The FPA daughterboard alone is £5.

Existing ARM3 owners of the PGA type can have their ARM3 chip moved on to the new board even if it's soldered in, with prices starting at £40. Surfaced-mounted PQFP ARM3 owners are also catered for and CJE Micros can offer a part exchange deal.

Power to the base

S-BASE is a desktop programmable database produced by Longman Logotron (0223 425558), the only one for Acorn machines, and it stands up well to the more expensive PC equivalents of FoxPro and Paradox.

Longman will have S-Base Developer Plus and S-Net on show in October. Developer Plus handles all the intricate details of the user interface allowing programmers to create customised multi-user applications with minimal programming effort.

Applications can be developed and compiled into standalone programs and run as single user applications or when loaded into S-Net can be accessed over an Econet network.

Adding words

NEW versions of StartWrite, EasiWrite and TechWrite from Icon Technology (0533 546225) will be available at the World of Acorn.

All three wordprocessors have been made even easier to use with the addition of a comprehensive *point and click* tool bar and new *drag and drop* editing. By adding a few new skills to your repertoire these applications will do almost anything without accessing the menus.

In addition, font independent bold and italic type effects can be added to text while with EasiWrite you can also add footnotes and sub- and super-scripted text.

TechWriter and EasiWriter now have hotlinks to Risc Developments' Desktop Thesaurus while the *speak as you type* ability of StartWrite makes it one of the easiest wordprocessors to use for primary aged children.

New sunrise for Twilight

THE Really Good Software Company (0582 761395) have announced their upgraded version of Twilight, the ultimate screen protection utility, to take advantage of new facilities available in RISC OS 3 – the software is still compatible with RISC OS 2. There's an new easy-to-use installation system plus extra operating system commands to make it more versatile.

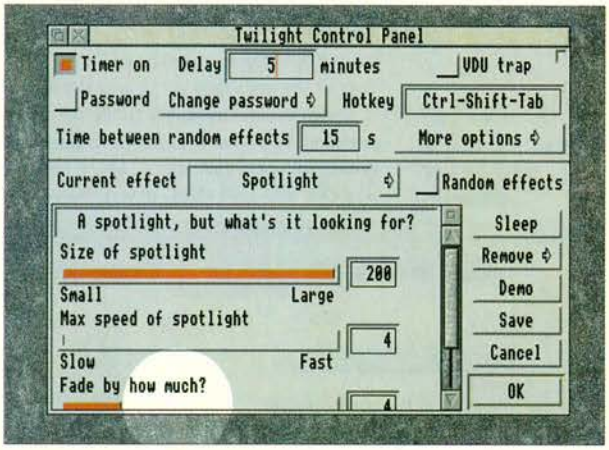
Twilight prevents the image of the desktop burning into the phosphor on the inside of the monitor, so prolonging the display's expected lifetime, by displaying a user-selectable effect that comes into action after a controllable time delay. There are 17 effects to choose from, each of which has many alterable parameters.

In addition, Twilight provides hot-key activation and password protection to stop unauthorised users from getting access to your machine while you're away from it. Twilight is network-compatible and a site licence is available.

A demo version of Twilight is available for £5 with that amount being deducted if you choose to buy the full product at £14.95. Documentation on how to write your own Twilight effects is also available.

Really Good Software have also released Notes, a stick-it pad utility allowing you to create notes as reminders of anything from what to buy to storing programming ideas.

Notes are either stored within the main application and set to appear at any time or can be put, as very small independent applications, on to disks sent to other people. Plus there's a special facility to attach one or more notes to specific files or documents so that the note appears when the document is run or loaded. It costs just £9.95 and is fully network-compatible.



● *The Twilight Control Panel is very comprehensive*

● *Notes is simple to use but has powerful features*

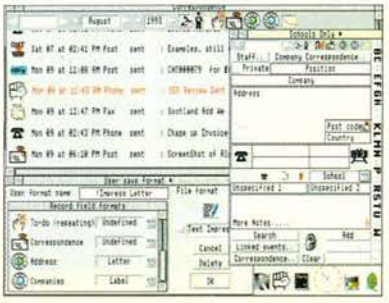
Language support

A NEW utility from Stallion Software (0225 339090) could be a boon to all ARM programmers. Assembler Help costs £15 and contains detailed online information on all ARM2, ARM3, Floating point and Coprocessor instructions, conditions, timings flags and so on.

Help on Acorn's Desktop Assembler's directives, variables, macros and constructs are also supplied. Assembler Help can be used on its own or with StrongEd's F1 Help key.

Stallion have also improved Lexicon – a set of programs designed to help teach modern languages – to include the cloze technique and a vocabulary tester. You can upgrade free of charge – just return the original disks to Stallion.

Enhancements have also been made to the time organiser application, Almanac, which now imports, as fixed and variable lines, TSV and CSV files while exporting in text spaced, text printer, text Impression, TSV and CSV formats. There are also larger icons, multi-line notes, cost fields with easier moving and copying of events.



● *Organisation at your fingertips*

Compressed art support

IOTA Software's (0223 421542) database, DataPower, now has support for ArtWork files so that pictures can be stored directly in a database file in addition to the standard sprite and drawfiles.

DataPower stores pictures by compressing them so that keeping files in a database saves disk space. More notably you can also add titles, descriptions, categories and any additional fields of information.

Find the one you want and simply *drag and drop* the picture out or print it directly.

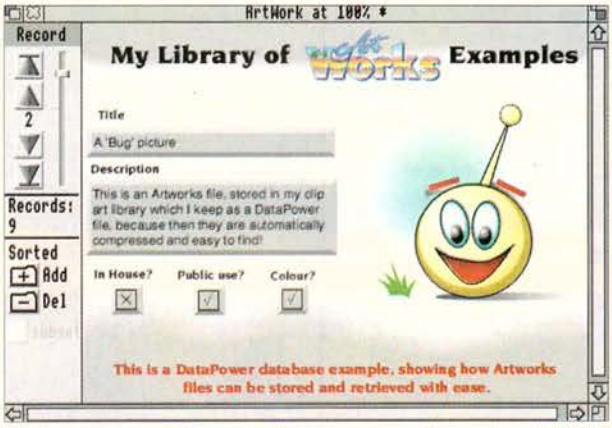
Pictures can be viewed in different formats from a list to a summary sheet as there is no limit to the number of views you can define.

Database layouts can be enhanced now with ArtWorks files added to screen or paper for certificates, address labels, badges and so on with high quality logos and designs created in ArtWorks.

Iota have also been developing a Client/Server version of DataPower to let people with networks have multiple read and write access to a database. It includes a record locking feature which lets you search and build reports while someone else is adding records.

DataPower was designed with *active* searching and sorting, so any new records are automatically inserted in the correct place.

● *A quick and easy way to access your picture resources*



Diary Dates

Live'93
Date: 16-20 September 1993. Venue: Olympia, London
Contact: Ticket Hotline (071-373 8141)

Education Software Fair
Date: 17-18 September 1993. Venue: Superchoice Centre, Weymouth
Contact: Dorset IT and Active IT (0929 405059)

Big Ben Club Open Day
Date: 2 October 1993. Venue: Kiekmure Community Centre, Utrecht, Holland
Contact: Big Ben Club, PO Box 1189, 6801 BD Arnhem, The Netherlands

Oldham Special Needs Show
Date: 6-8 October 1993. Venue: Queen Elizabeth Hall, Oldham
Contact: NW Semerc (061-627 4469)

World of Acorn Show
Date: 29-31 October 1993. Venue: Wembley Exhibition Centre, London
Contact: Acorn (0784 483818)

Logo Weekend
Date: 5-7 November. Venue: Superchoice Centre, Weymouth
Contact: Dorset IT Advisory Team (0929 405059)

Dealer Open Day
Date: 21 November 1993. Venue: Kegworth Hotel, Kegworth, Derbyshire
Contact: Selection Computer Services (0332 690691)

Acorn Computing Open Day
Date: 5 December 1993. Venue: Portland Hotel, Manchester
Contact: Acorn Computing (0625 878888)

● *Stunt Racer 2000 – driving in a different world*

Nigel who?

THE creators of Chocks Away have now added Stunt Racer 2000 to The Fourth Dimension (0742 700661) line up. In the year 2037, 16 tracks over deserts, arctic and lunar regions can bring you fame and fortune.

More than just speed is needed as you traverse jumps and stunts in a 3-D vector graphic world which you can view from different angles and track-side cameras. You can also choose between two-player split screen and if you have two machines you can link them using a special serial port cable and play two-player with full screen.

They've moved

THIS is the season for companies changing premises, including Acorn themselves:

Acorn Computers, Acorn House, Vision Park, Histon, Cambridge CB4 4AE. Tel: 0223 254254.

Cambridgeshire Software House, The Computer Centre, 8 Bramley Road, St Ives, Cambridgeshire PE17 4WS. Tel: 0480 467945

Cambridge International Software, 8 Herbrand Street, London WC1N 1HZ.

Lynsoft, 32 Irvin Avenue, Saltburn-by-the-Sea, Cleveland TS12 1QH. Tel: 0287 624843

NW Semerc, 1 Broadbent Road, Watersheddings, Oldham OL1 4HU. Tel: 061-627 4469

Talking in rhymes

NEW from Topologika (0733 244682) is a series of eight animated and talking rhymes. Each pack features one nursery rhyme which appears on screen as text, picture or both. The display is scrambled by the program and the child must solve the sound jigsaw puzzle using real sampled speech. The screen can be printed out at any time,

When all the pieces are in place you are rewarded with an animation created by Glen Burnett and a singalong tune.

The series is aimed at young children as a way to improve reading, listening, concentration and memory skills. Topologika's Brian Kerslake said: "An increasing number of children start school perfectly able to use a video recorder but can't play games and don't know traditional rhymes".

The first four rhymes will be Humpty Dumpty, Georgie Porgie, Little Miss Muffett and Ring-a-Ring-a-Roses. These will cost £15 each or you can buy the bundle of four for around £50. Before Christmas the remaining four will also be released: Little Jack Horner, Mary Mary, Jack and Jill and Baa Baa Green Sheep.

● *Mixing jigsaws and nursery rhymes*

Destination: Acorn World

WEMBLEY EXHIBITION CENTRE
DATE:
FRI 29TH
SAT 30TH
SUN 31ST
October '93

If you thought computer shows only had the latest word processors and spreadsheets, Acorn World will change your perceptions....

See how a full colour magazine is produced.
Experience the sights and sounds of a laser light show in the best games arcade in Britain.
See Kodak convert a film onto a photo CD.
Discover the secrets of the talking head.
Catch a glimpse of the future in Acorn's concept area.

Meet the boffins from the Science Museum.
Discover why children are jumping off cliffs as part of the curriculum.
New concepts • • •
New products • •
New solutions •

Acorn World: A TOTAL EXPERIENCE

Juggling, face painting, theatre seminars, special needs area... and the latest word processors and spreadsheets! And so much more...

Book today and SAVE £££s plus have the chance to WIN a fabulous Acorn Pocket Book.

Acorn WORLD 93
SPONSORED BY ACORN USER

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ADDRESS _____

POSTCODE _____

SAVE MONEY BY BOOKING TICKETS NOW

TICKET TYPE	PRICE	NO. OF TICKETS	AMOUNT
ADULTS	£5.00		£
CHILDREN	£3.00		£
FAMILY	£15.00		£
		TOTAL	£

All cheques made payable to Acorn Computers Ltd.

Please return your booking form to ACORN WORLD, C/O EXHIBITION PLANNING SERVICES, PO BOX 162, STAINES TW19 5JX.

ST993

TICKET HOTLINE: 0784 483818

WIN A POCKET BOOK!*

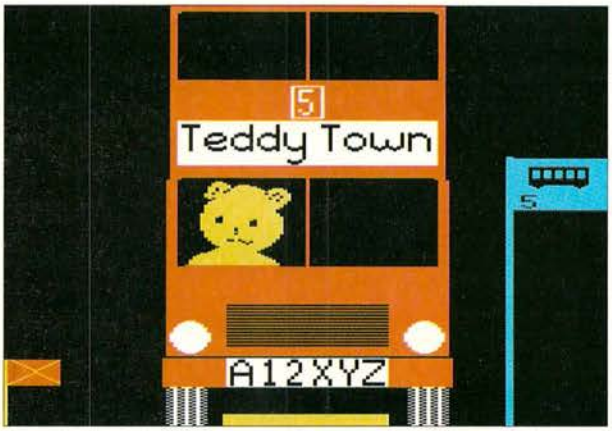
Return your booking form now and you will be entered in our special prize draw!

Competition details from the Acorn World address opposite. *No purchase necessary

Acorn

8-bit teddies take to the road

IT'S the end of an era for Sherston Software (0666 840433) who have released their last program for the BBC Micro. Teddy Bear's Rainy Day is for 5 to 7-year-olds costing £26.95 and follows on from the best seller Teddy Bears' Picnic.



● *Making the most of the rain*

Rainy Day contains five games which can be played in sequence or independently. **Phone Call** features a call from Grandpa Bear inviting Teddy over to his house. **Walk in the Town** involves navigating to the bus stop and remembering road safety. Next is **Fares Please** where tickets must be bought and paid for before the bus starts.

Slide and Squelch is a game using logic to investigate snail trails and bear footsteps.

Finally ready for a bath, **Hot or Cold** shows how cold water is heated and you must follow the correct sequence so as not to flood the bathroom.

And safely seated in front of the fire the forecaster needs some help with his weather forecast.

RISC OS 3 upgrade extension

GOOD news and bad news from Acorn. Firstly, the A5000 RISC OS 3 upgrade kit has been withdrawn – although most dealers still have some stocks remaining.

However, you can still upgrade RISC OS 2 to 3 for £49 until the end of October when the price will increase to £89.

Commenting on these two moves, Neil Gardner explained: "When we introduced the RISC OS 3 upgrade last September we offered it at a very attractive price. However, as some of our customers were apparently not aware that this special price was only for a limited period we are extending the offer.

"On the other hand, the upgrade for existing A5000 owners to move from RISC OS 3 to 3.1 has resulted in the offer being taken up by the majority of this potential market and so we now feel that the time is right to withdraw this particular part of the special offer".

Less for more

BIRMINGHAM Acorn dealers Daco Software were more than a surprised with one local school's offering in the Xchange initiative where Acorn give schools £100 to part-exchange their old computer equipment for new Acorn machines.

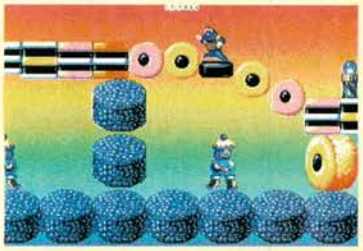
What Bromsgrove Lower School had was an enormous 30-year-old Honeywell Bull computer. Head of IT at the school, Colin Pickering said: "We found it useful to demonstrate just how much computers have reduced in size and gained in performance".

The old Honeywell is 27in high by 20in wide and 30in deep. "We launched the Xchange programme to encourage schools to get rid of their old computers, but when we asked them to bring out their dead we hadn't quite expected such a dinosaur", commented Acorn's general manager of education, Peter Talbot.

Even more life

WITHIN the Acorn Village at the Live '93 show you'll find GamesWare (0703 456523) and the launch of Eclipse's excellent conversion of Xenon 2 plus a preview of James Pond 2 – RoboCod. You'll also find *Acorn Computing* there.

True to the 16-bit originals, here's a glimpse of what you can see. But if you want to try out RoboCod for yourself, look out for the next issue of *Acorn Computing* – there'll be two levels for you to pits your wits against.



Morality tales

A SECOND volume of Naughty Stories is due from Sherston (0666 840433) this autumn. Six tales cover topics which are meaningful to young children and provide teachers and parents with opportunities for further discussion.

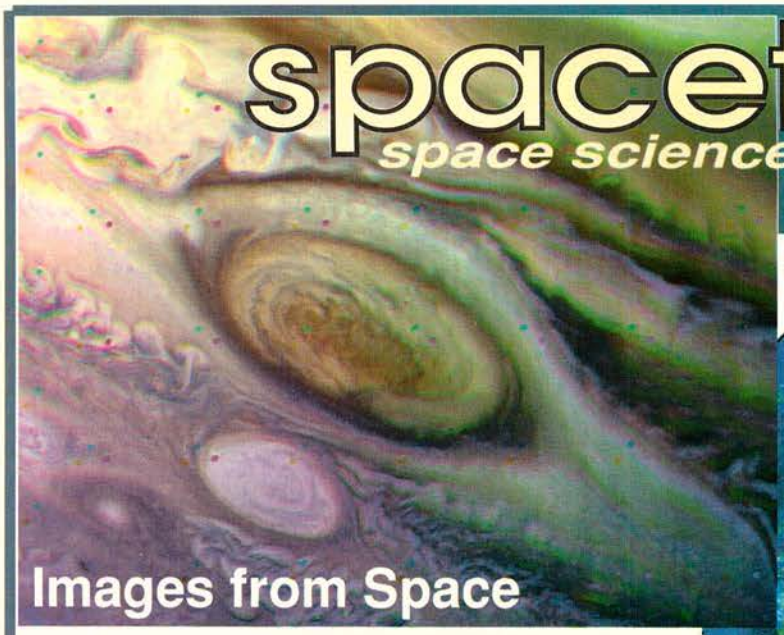
You can buy individual stories for £9.95 or the entire volume for £49.75 and as with the first volume they feature amusing animations, sound effects and human speech.

Bobby the Boastful Bird, Clarence the Clumsy Cat, Derek's Dopey Dinosaur, Gordon's Groovy Granny, Lucy the Little Liar and Tasmin's Terrible Tantrums make up the volume and come with their own full colour story book.

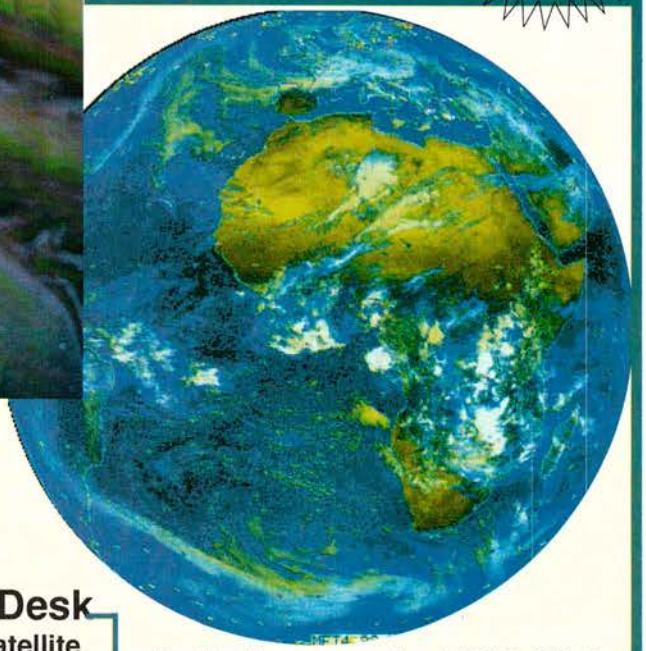
spacetech

space science resources

See us at Acorn World '93 Stand 38



Images from Space



A pair of demo discs containing several stunning spacecraft images, and including a superb whole Earth, multispectral animation, is available from Spacetech for only £5.00 fully refundable against purchase of:

PDSview

General purpose image processor
Featuring the Planetary Data System

OR...

The Weather Desk

Multi-tasking Weather Satellite
Image Gathering System

Both discs require RISC OS 3
Animation Demo needs 4MB RAM

spacetech 21 West Wools, Portland, Dorset DT5 2EA. U.K. Tel. 0305 822753 Fax. 0305 860483

StartWrite

EasiWriter

TechWriter

Announcing a major step forward...

The Icon Technology family of word processors has been made even easier to use.

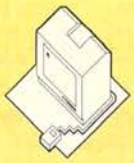
We've added a point-and-click toolbar so you can carry out the most common tasks without using menus. Just click on the tool you want, to Print or Save for example, and the job is done.

As if that isn't enough we've also added 'drag and drop' to simplify editing. Simply select the text or picture you want to move and drag it to its new position in your document.

There's more...

StartWrite can speak. Helpful for children and fun to use. And now you can create footnotes and add sub- and super-scripts to EasiWriter as well as TechWriter documents.

For full details simply contact Mike Glover on 0533 546225.



ICON TECHNOLOGY LTD

5 JARROM STREET • LEICESTER • LE2 7DH • TEL. 0533 546225

Economical print

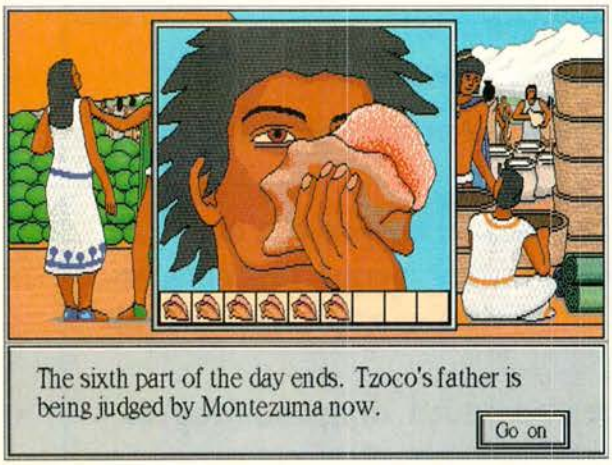
STAR (0494 471111) have a reputation for providing value-for-money solutions and they have now announced a drop in price of their most popular colour dot matrix machines – the 9-pin LC-100 and 24-pin LC-200 to £199 and £333 respectively.

South American adventure

DINOSAURS, Vikings and Aztecs are perennial favourites with schools and Simon Hosler's education programs have an enviable reputation. Now his brother, Adam, with wife Sandra, are now following in his footsteps as Sherston (0666 840433) launch Aztecs for the 32-bit machines.

The adventure begins in the present day with a visit to Aunt Maud and eccentric Uncle Angus who has invented an amazing computer/jet pack. En route to Miami they enter the Bermuda Triangle and find themselves back in the time of the Aztecs. To survive they have to learn as much as they can about Aztec ways but with Uncle Angus' databank to help them they should manage.

Aimed primarily as schools, Aztecs costs £39.95 and comes with a variety of resource materials including challenge cards and ideas for work away from the computer.



● *To survive you must find out how the locals live*

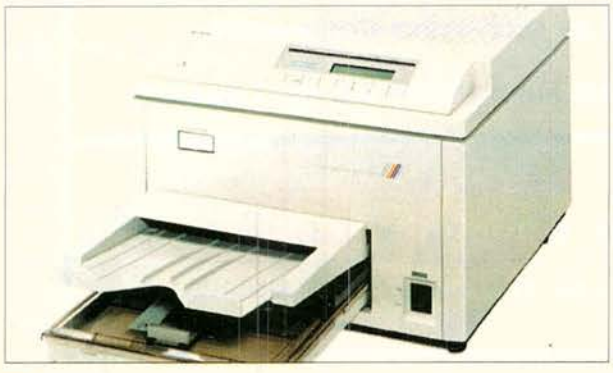
Deutsche formation

ACORN machines have made considerable inroads in the professional marketplace in Germany which has been helped by the release of a German operating system. However, because of their impact in professional DTP, Acorns are not seen as education machines there – a mirror image of the situation in the UK.

4Mation (0271 25353) have gone some way to changing this with a joint venture with German publishers Schneider and Scholz of Illertissen who are producing versions of Vector, Hatchback and Chameleon for the German market. Versions of Poster, Snippet, Chatter and Noot are planned for 1994.

JX-7000 prints a Sharp rainbow

YOU can now print more than 16.7 million shades of colour if you use Sharp's new JX-7000 dye-sublimation printer.



Images are output with 8-bit pixel depth for each CMYK colour with a resolution of 300dpi.

The JX-7000 contains minute heating elements which vaporise solid dyes stored on a ribbon. When this dye hits the paper it resolidifies making it possible to control the quantities of dye with pin-point accuracy for 256 different scales per colour.

The versatility of the printer means that dithering is unnecessary as colours are mixed to create each shade you want. In addition, continuous tone eliminates spaces between pixels giving smooth transitions from colour to colour. It is PostScript compatible and the price is unconfirmed at this time.

Lucky winners

OVER the last few months we've had hardware and software up for grabs and here are the lucky winners.

Wild Vision had three Chroma Genlock cards with !Slideshow software of offer and the first three correct entries out of the sack were: R Young, Llangollen; Jon Wetherell, Rayleigh and Peter Brunning from Abington.

Staying with hardware HCCS had a selection of digitisers to be won and the person who found the most possible words from *Ultimate Expansion* was N J Westley of Bentley Heath who will be receiving a HiVision Colour Digitiser fitted to an Ultimate MultiPodule with a SCSI card.

The second prize of a Vision Colour Digitiser fitted to an Ultimate MultiPodule and SCSI card was Andy Cooper from Stevenage. He also let us know how he compiled his by creating two text dictionaries on ram disk from the dictionaries supplied with David Pilling's MicroSpell:

```
REM WordsFrom
REM By Andy Cooper
REM
ON ERROR: PRINT;" at line ";ERL:CLOSE#0:END
*RAM
WORDS$="ultimateexpansion"
WORDS%=0
FoundFile%=OPENOUT("Found")
FOR DICT%=1 TO 2
DictFile%=OPENIN("Dict"+STR$(Dict%))
REPEAT
DictWords$=GET$#DictFile%
Temp$=Words$ : Char%=0
REPEAT
Char%+=1
LetterFound%=FNfindletter
UNTIL Char%=LEN(DictWord$) OR LetterFound%=False
IF LetterFound% THEN
BPUT#FoundFile%,DictWord$
WORDS%+=1
PRINT DictWord$,WORDS%
END IF
UNTIL EOF#DictFile%
CLOSE#DictFile%
NEXT Dict%
CLOSE#FoundFile%
END
:
DEFFNfindletter
LOCAL P%
P%=INSTR(Temp$,MID$(DictWord$,Char%,1))
IF P%=0 THEN =FALSE
Temp$=LEFT$(Temp$, P%-1)+MID$(Temp$,P%+1)
=TRUE
```

Ten runners up prizes of an internal Mono Vision Digitiser are en route to: Tony Shew, Rochester; Ian Foro, Heaton Norris; Ian Darney, Camberley; Steve Palmer, Penwortham; Eric Geddes, Bracknell; Alan Izzard, Rugby; Nigel Corbett, Stourbridge; M F Tonar, Wavertree; David Brown, St Leonards-on-Sea and S Ogilvie from Guildford.

The Archimedes Specialists

BEEBUG

The Archimedes Specialists

Commitment To Acorn

Beebug are one of Acorn's largest dealers and are an accredited Education Dealer, Service Centre and Network Dealer. Beebug have been in the Acorn marketplace for over 11 years, and specialise exclusively in everything Acorn.

Service

Wherever possible, all orders received by 1pm will be dispatched the same day. All new items are supplied with at least 12 months warranty.

Technical Support

We have staff dedicated to providing technical help and advice to customers, which means continued support before AND after your purchase from us.

Stock

Only part of our wide range of products for Acorn are shown here. Please telephone for anything that you need, but cannot see listed.

Prices

You will find our prices VERY competitive. If you find the same item cheaper elsewhere, tell us and we will try to do better. Prices are subject to change without notification.

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A voyage of Discoveries

Pam Turnbull takes two systems on a school trip

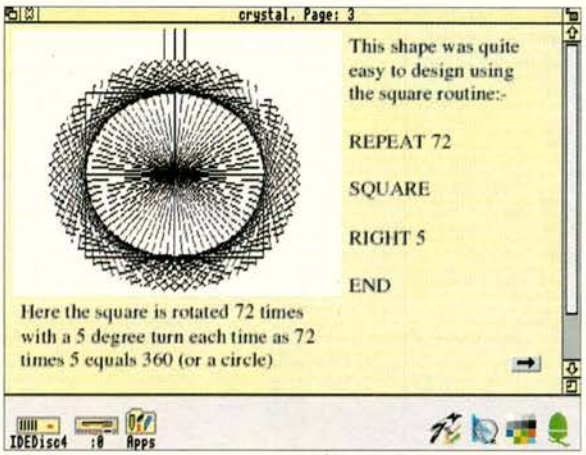
THE beauty of Acorn RISC OS machines is that you turn them on and the operating system is there so you're ready to run. With a hard disk you can easily set all sorts of applications and programs to boot up immediately.

However, Acorn, Cumana and NW Semerc have taken this a stage further with two initiatives aimed at the hard-pressed school user.

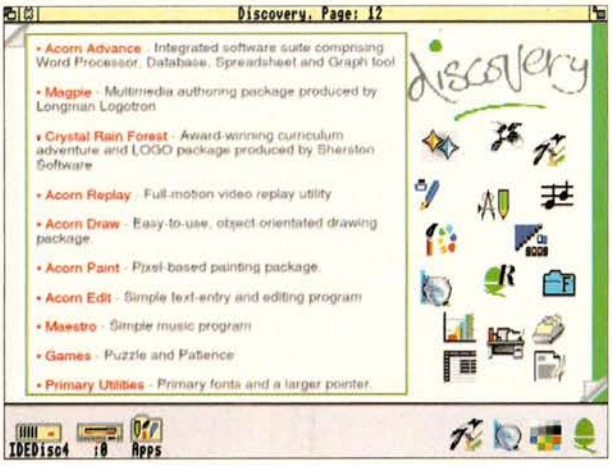
Acorn's own offering is The **Discovery System**, a basic A3020 with 60Mb hard disk, 4Mb ram system and medium resolution monitor with the standard Welcome Guide and audio tape.

But Acorn have installed on to the hard disk a series of programs which boot on start up: Acorn Advance, Crystal Rain Forest and Magpie. The moment the machine is turned on these are on the sticky backdrop ready to use.

Indeed the first time you turn on the machine you'll be met by a Magpie document explaining the system and the programs in it, from the standard resources of Paint and Edit to a project using the Advance programs developed by a school and a Magpie document on how to use Crystal Logo. In addition, there are tutorials and help on all aspects of the programs.



● *Magpie is also used to help support Crystal Logo*



● *The system is introduced through Magpie which boots up automatically*

You also get a pile of useful bits and pieces including a very stylish mouse mat, a set of money off vouchers, list of education centres, wall calendar, Acorn Education Directory and a series of Teacher's Companion Appendices.

The primary fonts of Jumbo and Script were well received and there's an application that makes the pointer grow in size when it's moved, so that it's easier to track, or have it fixed at a very large size. The colour can be changed too.

Teachers will certainly appreciate the idea of not having to install programs but, of course, everyone wants different programs loaded in addition to or to complement the ones already there. Advance is nice but most teachers already have their favourite wordprocessor and database.

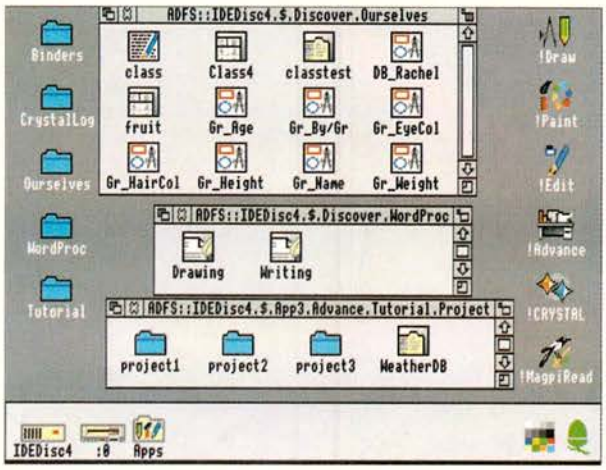
The support documents on the National Curriculum were useful too. There's a separate guide for IT users in Scotland and a guide to Discovery written with Anthony Hunt, IT coordinator at the Hampshire Microtechnology Centre.

This is aimed at non-Acorn as well as non-computer users, giving a simple introduction to Acorn machines and the principles of wordprocessing, data handling and spreadsheets and the ways they are used in Advance. These principles are also taken a step further in the booklet showing how they can be used with education software such as Magpie and Crystal Rainforest on and off the computer.

How about non-Acorn schools? Well, with LMS (Local Management of Schools) this is where the package really comes into its own.

Primary school teachers in one school are fighting to stay away from PCs which one of their governors insists is the way forward because of its *industry standard* nature. The friendliness of the start-up Magpie introduction would be just right for this type of school with its ease of use and impressive Replay files – a sample of the Robin file from ILP's British Birds is included.

Other computer companies have come up with similar systems aimed at schools with varying degrees of success. However, the Discovery pack seems to fall between two stools. For Acorn schools they like the principle but would prefer a



● *Advance comes into its own when doing project work*

● *Brilliant Computing's Pairs game is one of the programs on this plug in and go solution*

pick-and-mix approach to the software while non-Acorn teachers need more software or demos of a whole range of products for different ages and abilities.

Computers for special needs

THE Semerc A4000S is a combined effort by Acorn, NW Semerc and Cumana. Basically an A4000 with 80Mb hard disk and 2Mb ram it, too, has been designed as a *plug-in-and-go* solution but with special needs children in mind.

The A4000S can be bought as a new system or your education dealer can upgrade an existing machine. This consists of a Cumana Expandable Multi-Use interface (EMU) fitted with a user port, and a selection of pre-loaded software. The user port means that overlay keyboards, floor turtles, switch or control technology interfaces can be used easily.

EMU can also be upgraded to accept IDE, MIDI, Analogue, SCSI and Cumana Companion interfaces among others to give access to CD-Rom drives, music keyboards and measuring equipment.

The software supplied is NW Semerc's Phases 3 wordprocessor cum desktop publishing package and the popular My World program. In addition there are folders of useful utilities and part programs from Brilliant Computing and Widget.

The Access directory holds a selection of commercial and PD programs which aim to make the machine easier to use for people with or without special needs. The utilities include ones to run a Concept Keyboard, emulate the mouse, magnify areas, make the desktop flash when a sound is made, toggle the mouse controls, resize the pointer, make the pointer go to the caret in a document, alter the keyboard timing and move windows without using the title bar.

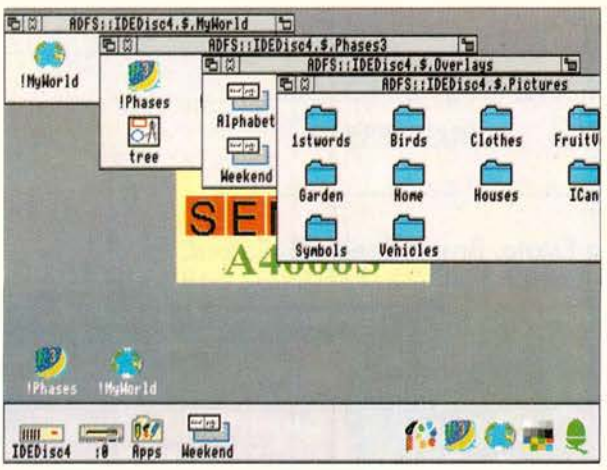
You can also try out some of Brilliant Computing's Frog, Microship, MiniAlex, Painting, Pairs and Switchon while investigating the life of a caterpillar as used by Widget's ScreenPlay, GridIt, Choices and TriLink.

NW Semerc recommended the A4000 as the base machine for three reasons: To allow wheelchair access – a separate keyboard gives greater flexibility.

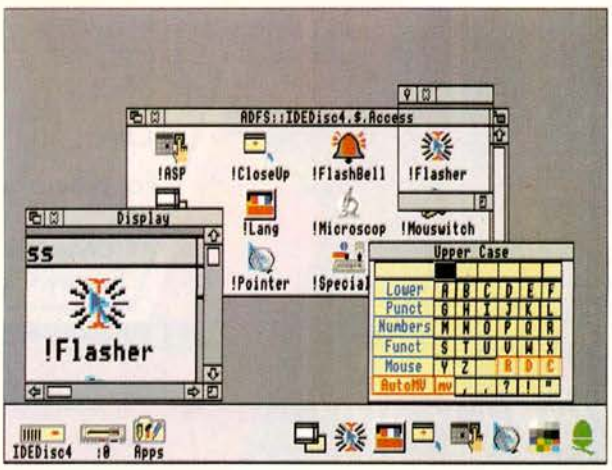
A hard drive is more convenient and for some users handling floppy disks can be a problem. Which leaves a straight choice between the A5000 or A4000 and although the A5000 has more expansion capabilities there is a cost consideration as well.

The computer is aimed at both schools and parents – who can buy the A4000S through their school. Three booklets accompany the software which give easy-to-read instructions on how to use the utilities, a parent's guide to computers and an A-Z of special needs for Acorn machines.

In practice, the system can be seen as the means to an end rather than an end in itself. Our testers saw the software and the supplied overlays and picture resources as a bonus rather than as a reason to buy. It was the enabling aspect of the EMU which impressed them as a long term way of accessing different products as needs and experience changed.



● *The A4000S is a normal machine with added extras – both software and hardware*



● *The utilities which come with the pack are extremely useful*

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Painting for beginners

John Clemence examines a new RISC OS art package

GIVEN the number of painting programs already available for 32-bit computers it may seem surprising that new packages are still appearing.

However, art programs are a bit like cars, cameras, videos, wordprocessors and dish washers – every new version seems to place an emphasis on different features and every new model seems to have as standard some of the features that earlier efforts lead us to believe were revolutionary.

Every so often, along comes a new package which actually does a great deal and costs quite a lot less than the competition.

ArtSchool is aimed at the younger child and yet has a range of well executed features all of which can be configured by parents or teachers to be on or off. The software is supplied on two disks, one of which is dedicated to storing pictures and the computer needs to have seen this before work can begin.

For newcomers there is full interactive help which you can switch on or off as and when you need it. Users with less than 2Mb of memory will find that they have to use a separate print utility – which is supplied – while RISC OS 3 users with 1Mb won't be able to use the program at all.

The review version was fussy about which SCSI drive it would work from but quite happy with IDE hard and floppy disk drives. This is being addressed by the authors.

ArtSchool has all the basic tools that I look for: Pencil, paintbrush, spray can and an assortment of *rubber banding* tools including separate ellipse, circle, triangle and rhombus. All can be drawn with a choice of four line thicknesses or as solid shapes.

All the tools are extremely responsive and although there is no grid lock, drawing vertical and horizontal lines presents no problem. The program starts with a 16-colour palette but clicking on the painters palette icon gives you access to 256 colours. This is a really well applied and simple-to-use facility.

There are also options for graduated shading of areas where you have complete control over the starting and finishing colour and some control over how rapidly the changes take place.

Text is available in three sizes and just one plain but pleasant font though text can't be edited or rotated. There is a scrap book of ready-made icons and these can be used in three sizes as well. Again, they can't be rotated but you can alter their colours.

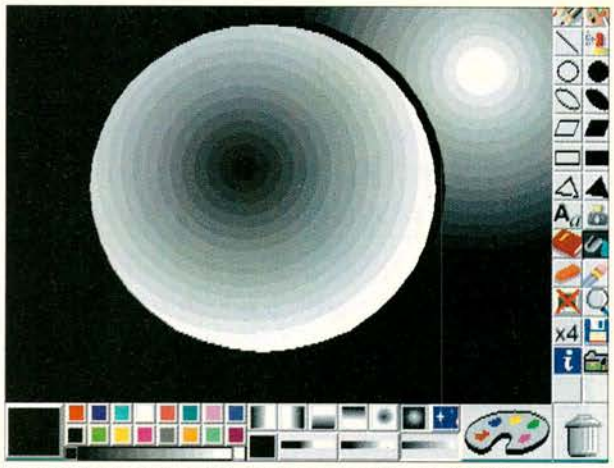
There are two sorts of eraser. One removes the last thing you did while the other removes selected areas of the last operation carried out. This is a very clever idea. A conventional rubber is not essential in a computer art program because you have so many controlled ways of painting out mistakes using other tools. But the kind of selective erasers in ArtSchool make intelligent use of the your computing power.

Cutting and pasting is very simple. Clicking on the camera icon allows you to place a rectangle around any area of the picture. This can then be pasted in its original size or one of two smaller sizes though again no option is available for rotating.

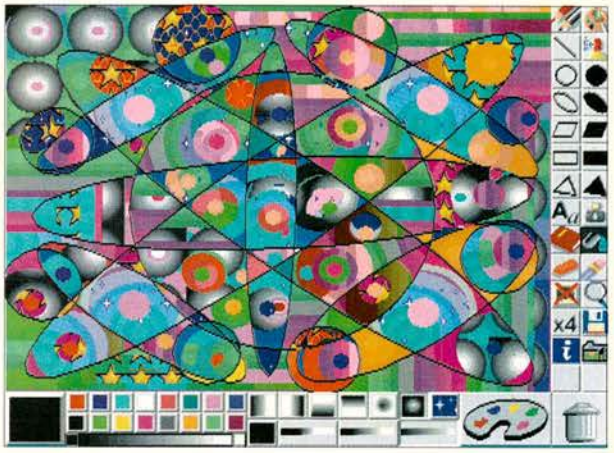
In addition ArtSchool has a magnifier which works at four or eight times the original size and all tools except text can be used with a magnified area.

PRODUCT SPOTLIGHT

Product: Art School
Price: £25.49
Supplier: MicroStudio, 22 Churchgate Street, Soham, Ely, Cambs CB7 5DS.
Tel: 0353 720433



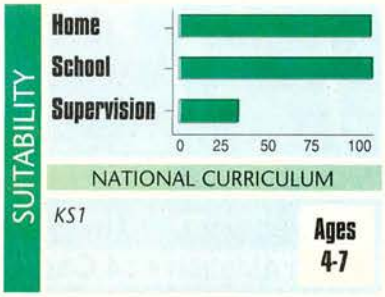
● *ArtSchool comes with some very usable graded fills*



● *Pattern making is easy and the computer helps the artistically challenged*

Summing up

Just about everything you need to start painting with your 32-bit Acorn is provided by ArtSchool. All in all this is an easy-to-use and well thought out package which represents very good value for money.



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Yes, it really was ten years ago that the original version was published!

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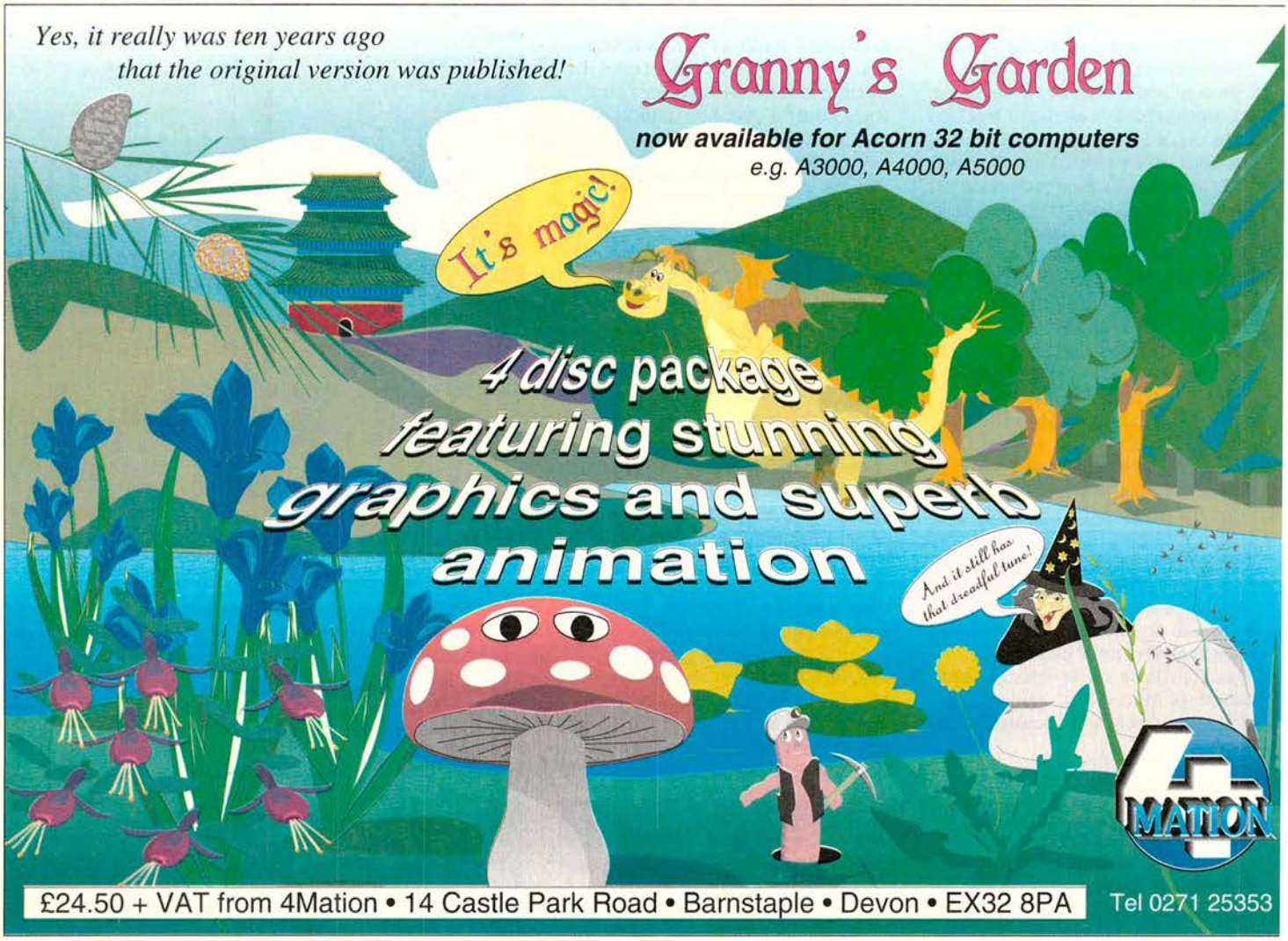
now available for Acorn 32 bit computers

e.g. A3000, A4000, A5000



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Here be dragons

A new educational adventure is put through its paces by Chris Drage

DARRYL the (very friendly) Dragon has a problem – he's caught a cold and his fire has gone out. The challenge for Key Stage 1 and lower Key Stage 2 children is to help him soothe his tortured throat, obtain matches to rekindle his fire and locate and return Darryl's fireproof handkerchief. And that's no mean task.

This is a new RISC OS adventure from 4Mation – past masters of such work. It's a two-disk package, one of which is an initialisation disk which must be present in order to run the program from floppies or hard disk.

Once the program is loaded, a number of options are available from the icon bar. One of three levels of difficulty can be selected as well as a suitable typeface from your !Fonts directory.

This is useful if you want to conserve memory – useful for 1Mb machines – or use the full screen area. These choices can be set and saved by an adult so that the program will always appear in a preferred manner. Games, too, can be saved and loaded from the icon bar.

One of the advantages of a program being totally RISC OS compliant is that, from the teacher's point of view, everything operates in the expected fashion.

In the first part of this two-part adventure children must solve logic problems in order to get Darryl the honey and matches he needs. A simple on-screen map guides children to the required solutions.

Typical of the puzzles is *crossing the river* which is a dressed-up version of the old chestnut about getting the farmer, fox, chicken and grain across the river in one boat except the characters are different.

Throughout, the children must make logical choices and see connections between related objects/situations. The second half of this adventure is the more challenging. Here Darryl's fireproof hanky must be rescued from the wizard's castle.

There are a number of rooms to explore, locked doors to open, problems to solve and hazards to overcome before the hankie is located. All this frequently means some trips into the wet, dirty moat before a solution is found. The tiles problem really tests children's numeracy skills and perseverance at the top level.

For children who find Granny's Garden hard going or are not quite ready for that level of difficulty, Darryl the Dragon should prove an excellent stimulus. Its level of difficulty and the language used make it ideal for young children who have sufficient mastery of the mouse and have a reading age of about six to seven.

The value of adventure programs like this lies in their ability to motivate children to persevere with problem-solving activities, to encourage the development of logic and linguistic ability.

As all adventures should be tackled by small groups of children, they also have the spin-off of encouraging positive social interaction. With careful introduction and organisation Darryl will more than adequately fulfil these aspects of learning and as such it will provide teachers with a number of useful assessment opportunities in IT and English. The separate set of 32 photocopiable activity sheets provide a focus when using the program and have been designed to stimulate and encourage children.

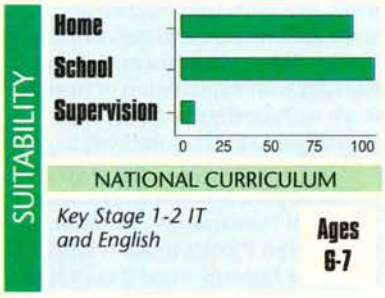
PRODUCT SPOTLIGHT

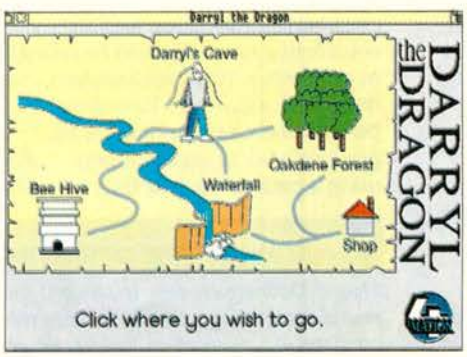
Product: Darryl the Dragon
Price: £19.50, £39 (site licence), £10 (activity sheets), £10 (extra key disks)
Supplier: 4Mation Educational Resources, 14 Castle Park Road, Barnstaple, Devon EX32 8PA.
Tel: 0271 25353

Summing up

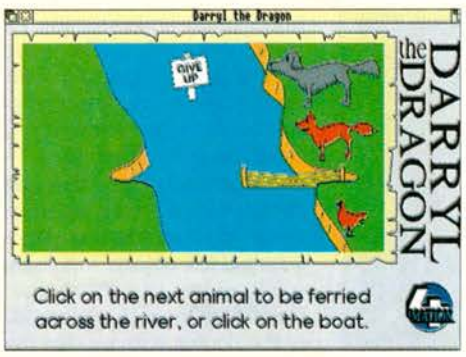
Darryl the Dragon is thoroughly recommended for home use, too, but one plea as a teacher: Please don't use it at home if you know your child's teacher will be incorporating it into his/her programme. Keep it for when the class have moved on to something else.

After all, experience has proven children like to return to adventures like Darryl again and again as they get older just as they do a favourite book. Thoroughly recommended for 6 to 7 year olds.

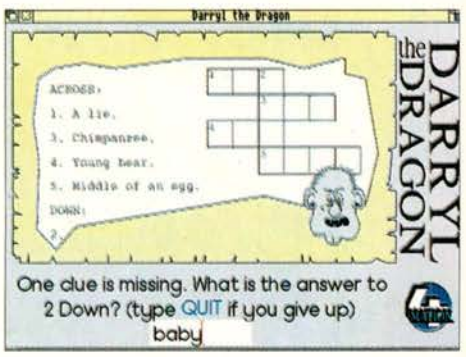




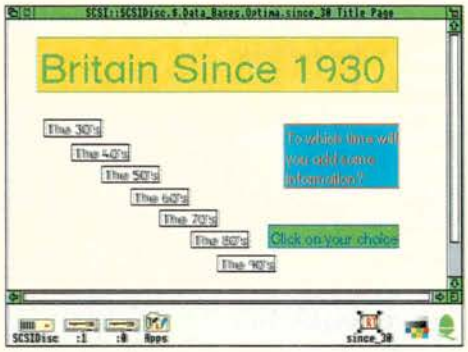
● *Can you cross Darryl's neighbourhood in search of matches and honey?*



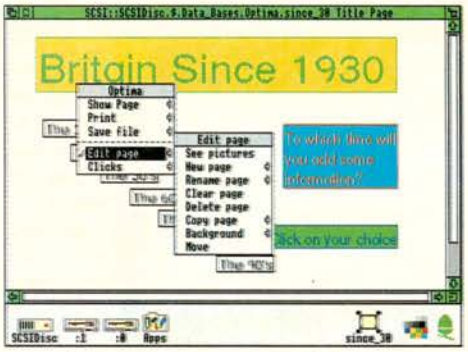
● *Perils abound but if you need help the inhabitants may assist you*



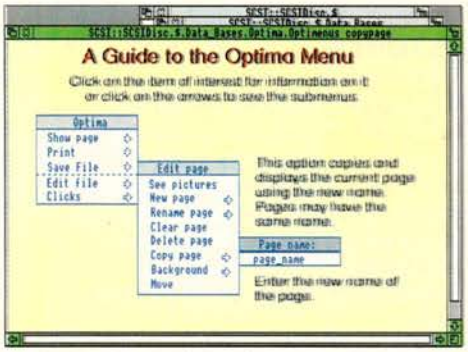
● *Which key fits? The difficulty decides the clues you are given*



● *Making a book on Britain since the 30's*



● *Modifying a page using the editing menus*



● *The Optima guide book is comprehensive*

Ultimate resource pack?

Do-it-yourself multimedia? John Clemence takes a look at Optima

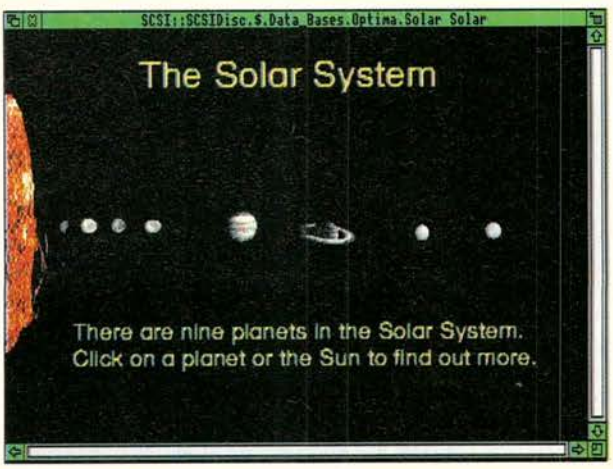
IF you've ever wanted to write your own computer adventure game or create an electronic book for children, you might find that Optima is a very economic way to get started.

The program is supplied on two disks, one with the program and some files while the other contains further files and resources. Among the files is an explanation of how to work with Optima, a rather nice simple guide to the solar system and a simple multi-choice adventure.

Optima is a multimedia package similar in principle to Genesis or Magpie, but it costs much less and has fewer features when it comes to linking pages and none at all for drawing simple graphics.

It does allow you to place sprites, drawfiles and sound samples on to screens or *pages* together with text which is entered directly from the keyboard. Text and its backgrounds can be in any available colour and surrounded by a simple black border.

● *Is this a space age book?*



PRODUCT SPOTLIGHT

Product: Optima
Price: £20 plus VAT
Supplier: NW Semerc, Fitton Hill CDC, Rosary Road, Oldham OL8 2QE.
Tel: 061-627 4469

Any screen can be linked to another by designating a text area, sprite or drawfile as a *button*. When you click on this in future you'll be shown the linked screen.

There are two levels of editing Optima files. At the first you simply arrange the contents and layout of your page. Any objects, including areas of text, can be made bigger, smaller, taller or shorter, wider or thinner.

They can also be put in layers so that one object can be placed in front or behind another. They can be copied, and graphics can be reflected horizontally and vertically. Once a sprite or drawfile has been dropped on to a page it's stored in a library from where it can be reused on subsequent pages without consuming more memory.

At the second level you have to choose which screen objects will be linked to other pages as well as decide if the objects will change colour as you pass the mouse over them. This gives the potential *readers* of the book a positive clue that they have passed over an area of the screen which will do something when they press a mouse button.

During use on my A3000 using RISC OS 3.1 I found that Optima occasionally ground to a halt and, furthermore, required a Control+Reset. I learned very quickly that it pays to save work regularly. I also found the need to switch between two sorts of editing a little confusing to begin with as was the rather vague way in which editing is enabled on existing files.

Another small niggle was the inconsistent way in which some of the highlighting of buttons appeared to work. However, I'm sure NW Semerc will deal with these points and the program is still very worthwhile.

Although aimed at teachers, Optima could just as easily be used by children to produce books for each other. Certainly this kind of exercise affords children opportunities for organising and presenting information in a variety of ways.

This encourages concentration on classifying information and considering how ideas can be related to each other. However, children will need to be allowed to have sustained periods of endeavour in order to produce work of quality when using a package such as this.

Summing up

I found Optima very easy to use and the results very pleasing. I would certainly recommend this to teachers looking for an economic entry into electronic book and simple adventure making.

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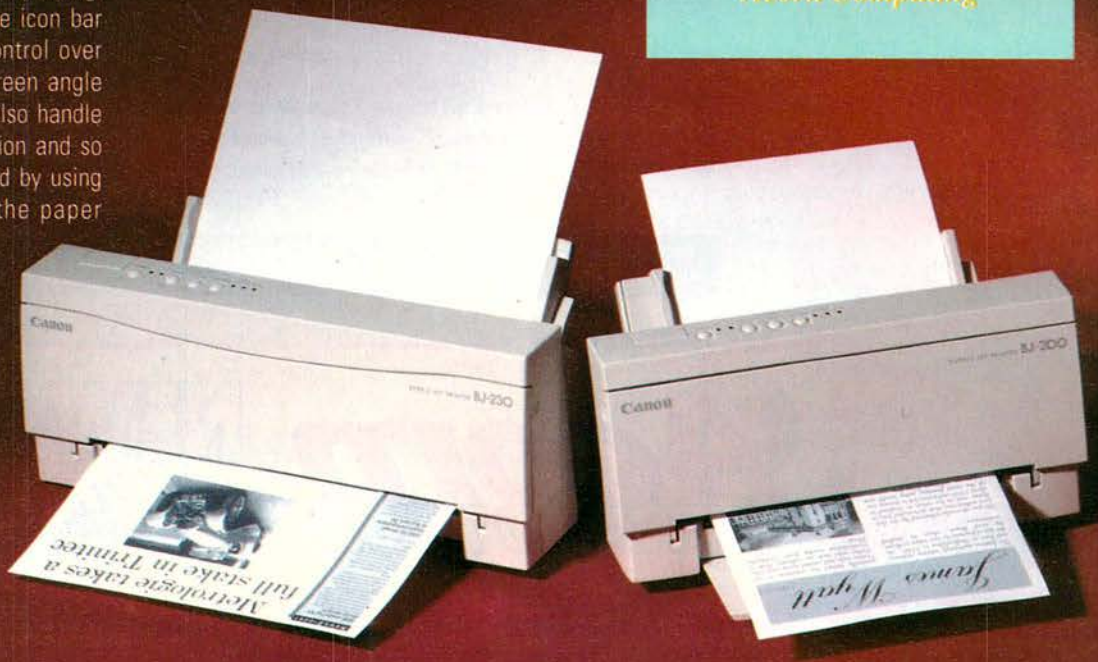

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PRODUCT SPOTLIGHT

Product: Topographer
Price: £79.95
Supplier: Clares Micro Supplies, 98 Middlewich Road, Northwich, Cheshire CW9 7DA.
Tel: 0606 45811

PRODUCT SPOTLIGHT

Product: Navigator
Price: £40
Supplier: Topologika Software, PO Box 39, Stilton, Peterborough PE7 3RL.
Tel: 0733 244682

Colour coordinated

Frank Jukes examines just how well a pair of individually developed programs work together

MAPWORK on Acorn machines has recently taken a huge leap forward with the release of Topographer from Clares and Navigator from Topologika. These two programs take on different aspects of creating and working with maps and work well in isolation and even better when used together.

Topographer comes in two parts, Topographer 2D and 3D, and is all about creating and editing maps. Navigator on the other hand takes maps already drawn and uses them to teach navigation systems. Very usefully, maps created using Topographer may be used by Navigator.

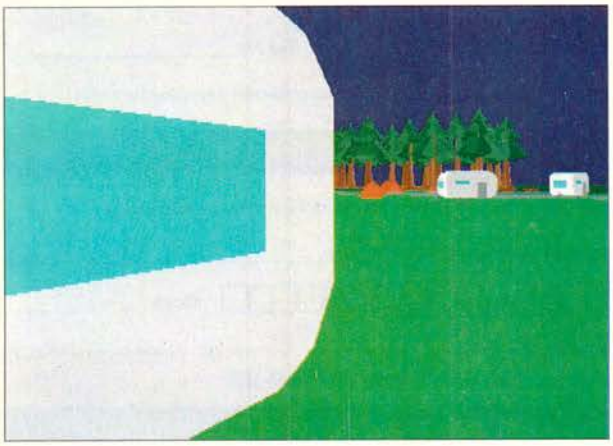
Topographer is powerful yet very simple to use. If you have experience of Draw and My World you'll be able to master the basics very quickly.

Roads, churches, contour lines and woods are among the many ready-defined symbols/objects which are selected by clicking and placing in position on the blank map.

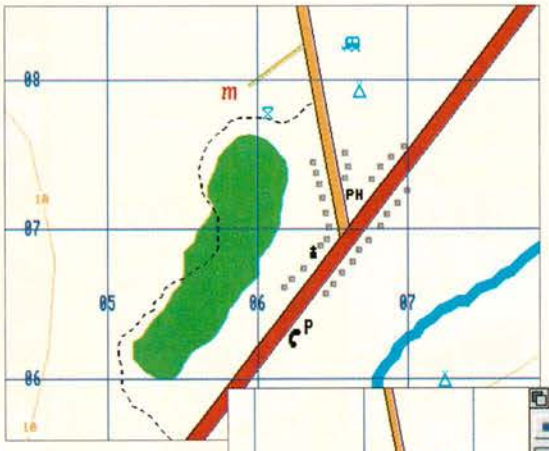
With coordinates shown on screen in the form of eastings and northings, the map used in the tutorial is accurate to within a metre – as long as your mouse has been de-sensitised. I have mine set up to patter across the desktop like it was auditioning for a Tom and Jerry cartoon but Topographer needs something more sedate if it is to achieve maximum accuracy.

Typical of Clares' thoughtfulness is the tutorial which is included on one of the disks. This forms an excellent introduction on how to get the best from the package by using ready-made, but only partially completed maps, the tutorial provides an introduction to most of the techniques required.

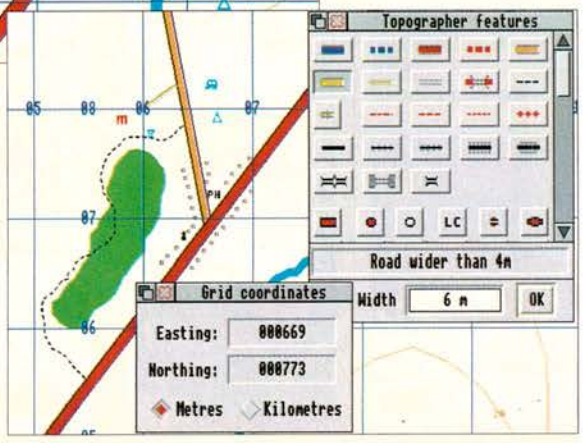
For many who seldom use maps for something more serious than getting from home to the coast, the use of eastings and northings to define a position presents problems. Most of the confusion and difficulties evaporate after a few



● *Building up a view in Topographer 3D – will the church be visible from the caravan site? It's easy to see why not, as the foreground is inserted*



● *Topographer: Creating a map of a small village at a crossroads with an ancient monument, camp and caravan sites nearby*



● *You can choose and place symbols with great accuracy in Topographer*

minutes following the tutorial to create a map.

As the mouse moves around, the optional coordinates window updates the pointer's position. Moving the pointer to the right increases the eastings value while moving it up the display increases the northings value. Nothing simpler. Even the relationship between these coordinates and the grid lines becomes obvious as the pointer traverses them and the display changes.

Roads, rivers, railway lines and the like are treated, quite unsurprisingly, as lines and may be drawn as linked segments or drawn freehand by holding down Select. This method produces lines which look natural and don't have the false corners that a succession of straight lines would have.

Just in case a wobble spoils things, the software checks for sharp curves and lets you know when it thinks that things are in need of adjustment.

The line is then shown much as a line is when it is being edited in Draw. The control points cannot be dragged but a new line can be created between the error points.

If features such as roads are to be joined at a junction the software provides an easy way to achieve a neat and tidy join. Nothing much has been left to chance.

Items such as houses, pubs, camp sites and lighthouses – both used and disused – are placed simply by pointing and clicking. If they have been placed in the wrong position, or if their positioning is part of a planning exercise, moving them is no more complicated than pointing and dragging.

Testing your creations

As if all of this wasn't enough, Topographer has yet another surprise. It can take a map and produce a 3-D representation of the landscape. It takes a little time to do this but aren't all good things worth waiting for?

The view is created by exporting the map file into Topographer 3D from Topographer 2D. Slowly built up from the distance into the foreground, each successive layer interacts with its predecessors to create a fairly realistic impression of the chosen view.

The interpretation of maps is a difficult skill to acquire but with the help of Topographer predictions may be checked and verified. Any mistakes in a prediction, and the reasons for them, are made apparent as the view is built up. This has got to be easier than donning wellies and anorak for a look at the real thing with OS map in hand.

Navigator takes over where Topographer leaves off. Maps produced as Draw files – an export option from Topographer – as sprites, or as compressed files from Imagine, are used to teach the use of a number of navigation systems.

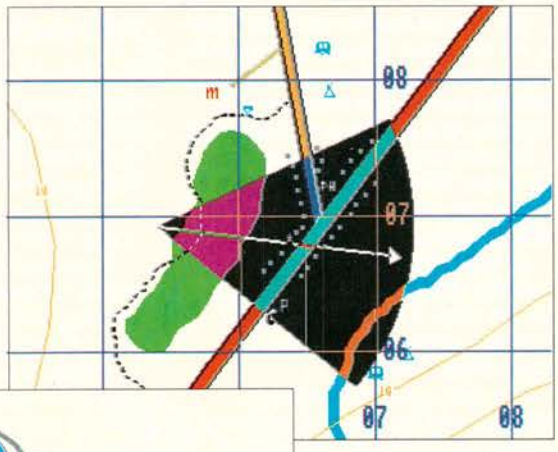
Eight systems are supported: Rubber banding, two versions of a logo type system, latitude/ longitude, compass using 8 or 16 cardinal points, compass bearings and distances as used in orienteering, vector notation and, finally, eastings and northings. All the different navigation systems are available and any may be selected at any time.

The eastern outlook

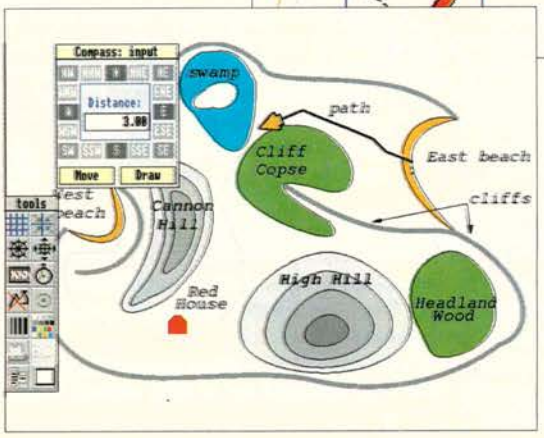
Eastings and northings are described in the two programs. Topographer uses pairs of 2, 3, 4 or 5 digit numbers such as 00251 00346 while Navigator always uses a pair of 2, 4, 6, 8, 10 or 12 digit numbers.

This is one aspect where the two programs have been developed to complement one another and it's good to see two independently designed programs being improved to increase their interaction for the good of all.

The program, like many of Topologika's, is very flexible. It is ➤

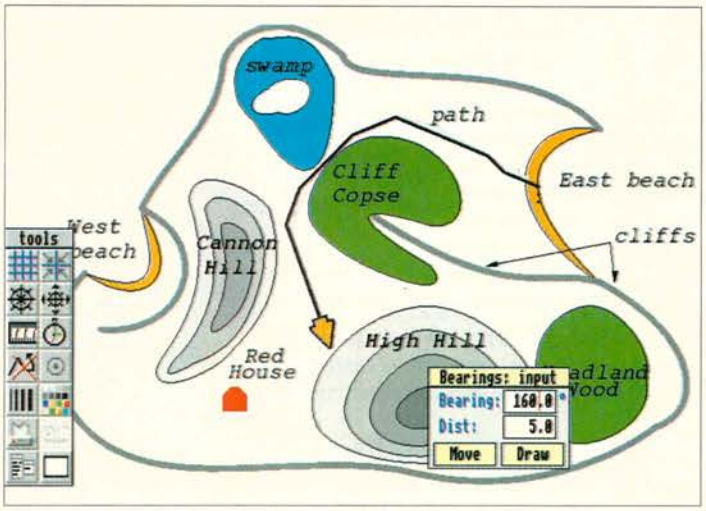


● *The cone and the arrow show the extent and direction of the view to be drawn*

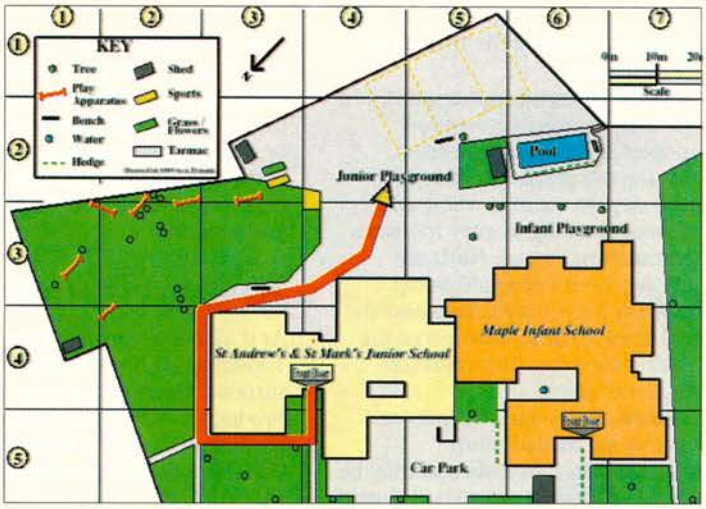


● *Using Navigator's compass bearings to navigate around the island, keep to the path if you can*

● *Taking a look at the church from behind the wood will it be visible? You can soon see for yourself*



● *For Navigator's next port of call, set a bearing*



● *Find the way to the playground as fast as possible using rubber-banding*

➤

quite easy to customise it to make it less complicated, more interesting or even almost tamper proof. This flexibility is on a very practical level and permeates the whole package to provide many options.

One of the major options is one to reduce the number of choices available in menus. To do this, any or all of the menu entries – which may displayed as a standard RISC OS menu or in a toolbox containing icons – may be disabled and appear greyed out.

Changes in presentation also make the package easier to use. The colour and thickness of the path taken around the map, for example, may be altered to make it more visible. On some maps it can be quite difficult to follow some routes.

Different dart shapes – choose a train, an aeroplane or a stick man from among a good selection – make for added interest and fun and the display of a timer helps to generate a need for some purposeful decision making.

Navigating the design

Movement around a map is simple to achieve whichever of the eight methods of navigation might currently be selected. It's whether or not you can describe the place to move to that's the problem.

The rubber-banding method doesn't represent a conventional way of navigating but it works well as an introduction – just click to move. The Tiny Turtle and Turtle systems, which offer preset or fully variable logo-like moves and turns, are more widely known when it comes to getting from A to B via somewhere else.

Both methods involve the use of a small dialogue box through which instructions to move are given either by clicking or by entering a value for a turn and/or distance and then clicking.

Using latitude and longitude for navigation is the stuff of seafarers, so changing to the ship pointer – or is it a yacht? – is the first thing to do before setting off.

Using latitude and longitude to navigate isn't too simple and it needs a lot of careful thought. With the option to display a grid turned on, with a little knowledge about degrees and minutes and with a hopefully developing sense of direction and distance, progress soon starts to be made.

Moving around in compass mode is, on the other hand, far simpler. With either 8 or 16 compass points selected movement is achieved by clicking on a direction and entering a distance to move. Clicking then on either Move or Draw will move the pointer to the new position or draw a track to it.

As with the other navigation systems, if the point to move to is off the map, a friendly warning message appears and the pointer stays where it is.

I recently spent a wonderful afternoon at the Moors Centre at Danby on the North Yorkshire Moors where a group of 9 and 10-year-olds mastered the rudiments of using a compass to move along a bearing. Using Navigator in its Bearings mode would provide some very useful follow up work for them. Not as a replacement for the real thing – a computer can never adequately replace a first-hand experience – but as reinforcement of the basic principles.

The last of the systems on offer uses vectors. In this mode a distance to move in the X direction and a distance to move in the Y direction are required to be entered before clicking on Move or Draw to initiate a movement of the pointer. As with some of the other modes, deciding on how far to move is sometimes a greater problem than choosing the direction in which to move.

Compatibility

Navigator's answer to Topographer's 3D surprise is its ability to load another map automatically once a designated position or *link-point* has been reached. By setting and using link-points a traveller can, in effect, zoom in on a particular location.

A succession of these moves could, for example, represent a journey which starts with moving around streets to a railway station resulting in a transfer to a map of the destination town. Within this second map the link point could be in the local park which would then transfer the focus to a map of the park and so on. Lots and lots of possibilities there for a creative approach to map work.

Summing up

Both Topographer and Navigator are high quality programs. Used in isolation for discrete tasks, or as a complementary pairing, they offer a significant advance in terms of resources for teaching and learning geographical skills.

I can't imagine that there will be many with an interest in either geography or map work (or both) who will not wonder how they managed for so long without them. The wait has been well worthwhile.

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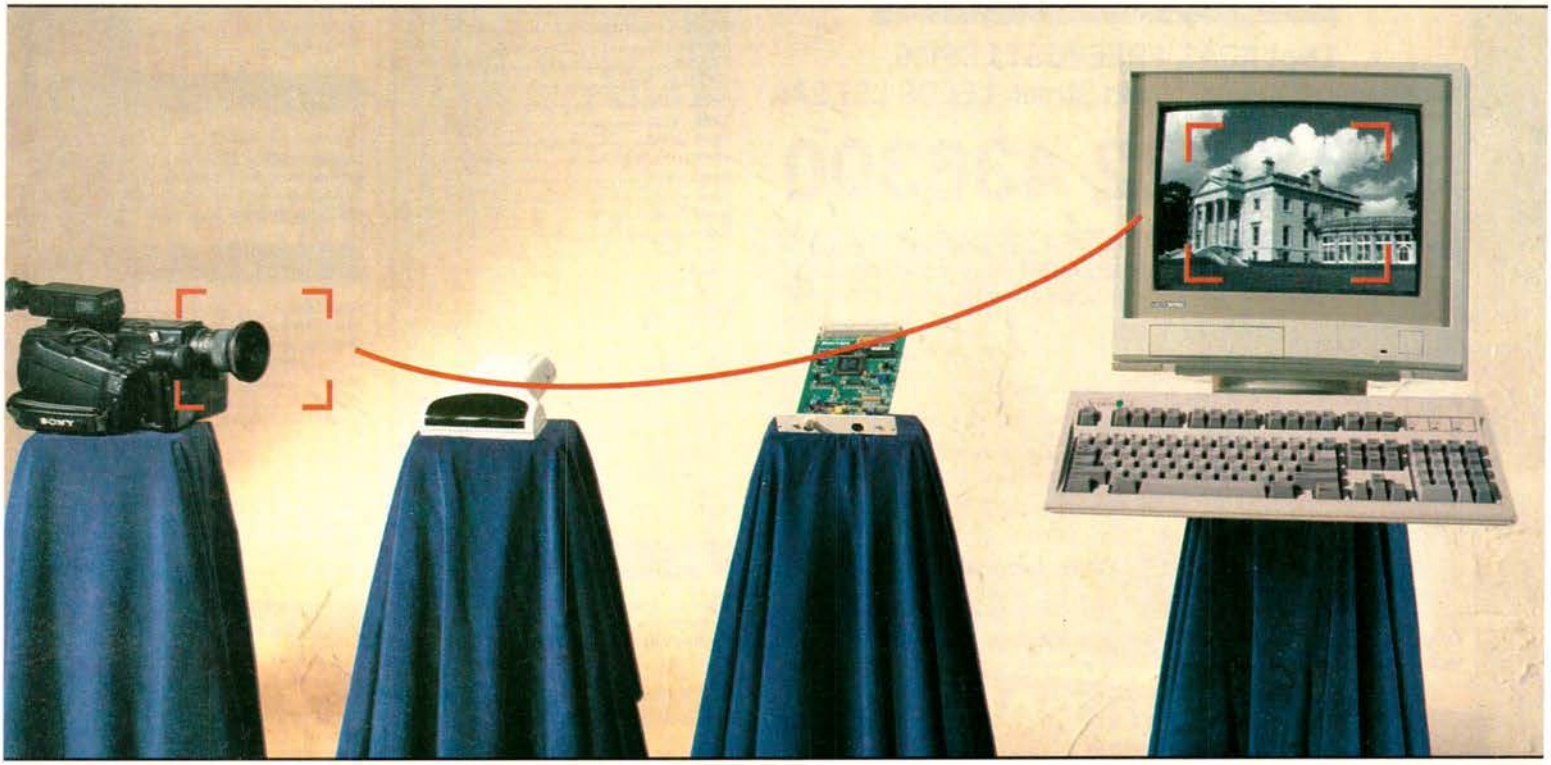

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Jurassic Arc

THIS summer has doubtless witnessed the most successful monster movie of all time, namely, Jurassic Park. For the benefit of that one person who may have missed it the plot revolves around recreating extinct dinosaurs from the DNA contained in blood sucked from a real dinosaur by a 100 million year old mosquito preserved in amber.

A major problem scientists have is piecing together complete DNA strands some few billion parts long in the correct order with no blueprint to copy from. It is this DNA blueprint that stores the code for creating such complex organisms – which is where this month's program ties in.

I thought it would be fun to make a program that created endless permutations of fantastic dinosaurs from a sequence of code like that of DNA and save the images that you like best.

My genetic code is a little shorter than DNA – in fact the sequence has 21 divisions with a range of 1 to 9 for each division resulting in 21^9 (several billion) permutations so, with those odds, every monster created should be unique – and that's not including random colouration factors either.

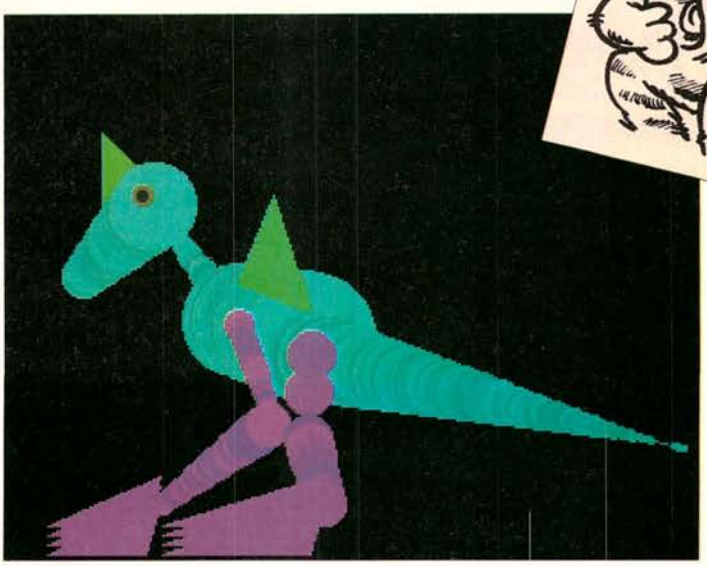
Thereby hangs a tail

Similar to real genetics, some of the monsters created have obvious defects like impossible gaps in body segments or dislocated tails but such is the variation it won't be long before a real stunner appears!

The basic structure of the creatures I was interested in creating involved land-based quadrupeds with a tail and back fins. The first 11 digits of the variable *A$* denote the xy positions of the seven joints or joins needed – Figure I. Note that some things are fixed: The elbow joint (4) is always behind the shoulder joint (1) and the knee joint (6) is always further forward.

The 12th digit of the sequence is the number of neck bones, the 13th is the spine bones and the 14th tail bones. Already the variations possible are into many millions. When this initial structure is complete the *flesh* is added using different shaded circles.

The radius of the circles is governed by the 15th, 16th and 17th digits of the code. By working out the vector between successive bones a series of either increasing



Mike Goldberg gets bitten by the dinosaur bug

or decreasing circles are drawn overlapping one another between the joins.

The legs are drawn in the same fashion, the radius information derived from the 18th digit. The feet are rather rudimentary – just a series of overlapping triangles – but again the size will vary governed by the 19th digit.

No dinosaur would be complete without some scaly bits, so the 20th digit generates the fin size for the plates that stick out of the dino's spine.

Lastly the 21st digit denotes head size – one design in this case with a crest and uniform eye.

Well, that was the idea and it all works but it was not easy. Some of the information had to be fixed rather than variable, like making sure the neck became thinner at the head end and similar attenuation of the tail.

Outrageously unlikely

It all served to impress on me the astronomical vastness of the encrypted instructions of DNA and how outrageously unlikely lifeforms really are.

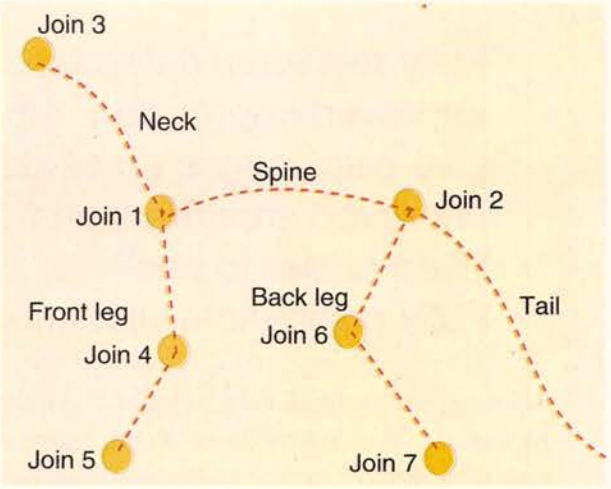
I thought about this during the writing of the program wondering where to stop. I had originally wanted to include skin texture information and teeth and fang sizes but I didn't have an evolutionary timescale within which to work.

Also there is no logical correlation between body mass and leg girth or neck width and head size – factors that nature more often than not takes into consideration.

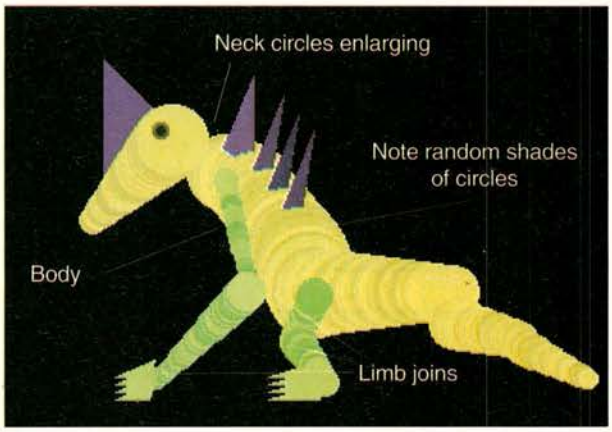
Using the program is swift and simple and, I have to say, very enjoyable. Each dinosaur takes less than a second to draw and you can save any image to disk.

Each successive screen save is numbered consecutively with the prefix *Dino* in order to give you a chance to find the saved file in one of your directories – not that it's difficult to set the directory or anything.

And that's about all there is to it, being a creator! I can understand the appeal. Anyway, I use all the programs I write and I've saved some examples created by this one shown here. Sometimes part of the dinosaur was too big to fit on the screen but that's extinct creatures for you – you just don't know how they're going to behave!

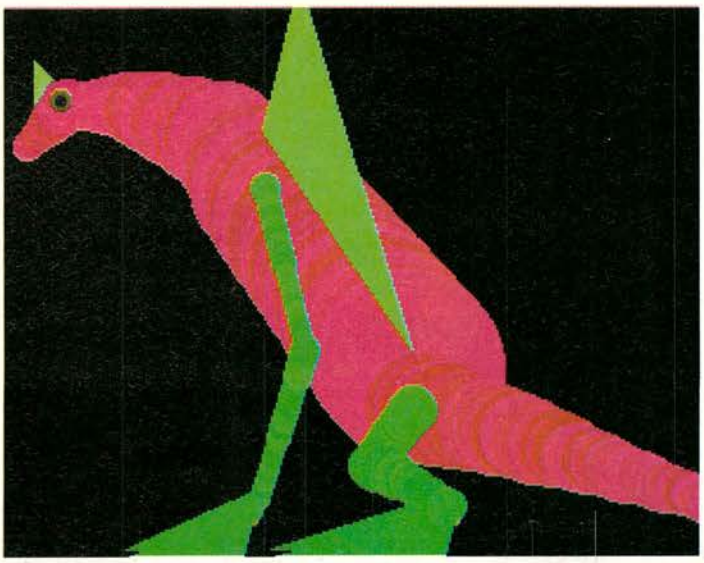


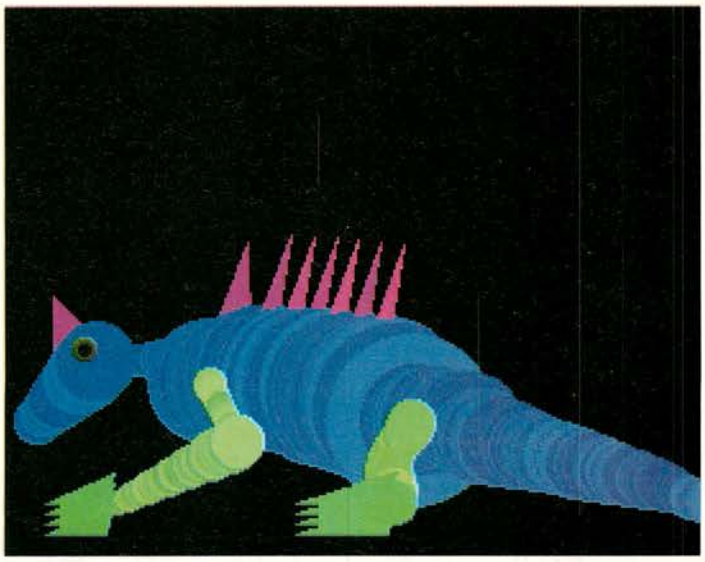
● *Figure I: How the dinosaur shape is constructed*



● *Figure II: Putting the flesh on the bones*

● *This is one software idea that's just dying for extension: The next obvious enhancement is to allow data to be input, then you could start getting more esoteric with mutations of basic design and breeding between creatures – the sky's the limit. Have fun and never turn your back on a Velociraptor.*





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Empire strikes back!

Mike Cook makes movies courtesy of Acorn Replay

IT'S NOT often we bundle two products together for a review, but these are so complementary that I doubt you would just want one on its own.

Acorn's Replay system allows the playing of digitised film clips, in real time, on your computer desktop. There are similar, and incompatible, systems for the Macintosh and PC and they are all at the forefront of multimedia presentation.

The problem with showing a movie on a computer is the large amount of memory the frames occupy. With 25 frames a second, tens of megabytes can quickly be consumed, especially when the sound is stored alongside it.

The trick is to cut down the storage requirement by some method of image compression. Then, during the replay, the images are expanded to their full state. As you can imagine, this puts a lot of strain on the computing capability of the microprocessor. As owners of Acorn machines we are lucky as even the humble ARM2 chip can cope quite well.

Acorn have a free CD-Rom of Replay Video clips, with each clip stored twice, once at 12.5 frames a second and once at 25 frames a second. The slower frame rate is intended for ARM2 machines and the faster for ARM3. If your processor can't cope with the rate, frames or snatches of audio are dropped, resulting in a slight pause and then resumption.

This situation is all too familiar to users of the PC and Macintosh system as only the top of the range models can cope, whereas *all* Acorn machines can handle Replay. They do suffer from their limited colour rendering which gives a slightly less convincing colour picture.

However, the actual Replay Movie files are encoded to 15-bit colour depth which means that the picture quality will greatly improve when Acorn release machines with better graphics capability.

Until now, if you wanted to produce your own Replay Movies you were talking of big money from an Acorn authorised Compression Service Provider. Now, thanks to these two products anyone with a relatively modest system can produce their own movies. So let's see how we can go about doing this.

PRODUCT SPOTLIGHT

Product: Empire
Price: £75
Supplier: Uniqueway, 143 Allensbank Road, Heath, Cardiff CF4 3PQ.
Tel: 0222 644611
Requirements: ARM3, 4Mb ram, RISC OS 3.1, hard disk
Product: Replay DIY Capture System
Price: £250
Supplier: Irlam Instruments, Brunel University, Uxbridge, Middlesex UB8 3PH.
Tel: 0895 811401
Requirements: ARM3, 4Mb ram, hard disk

First things first

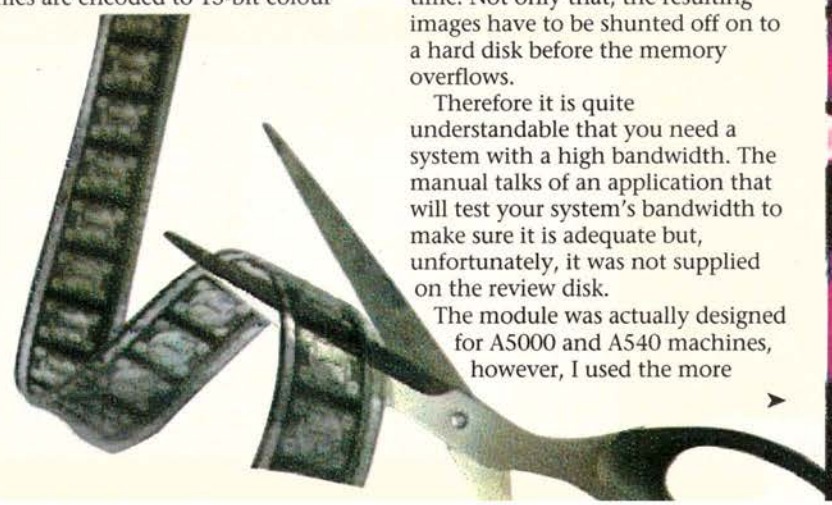
You need to be able to capture a movie as a sequence of digitised images and this is where Irlam Instruments' DIY capture system comes in.

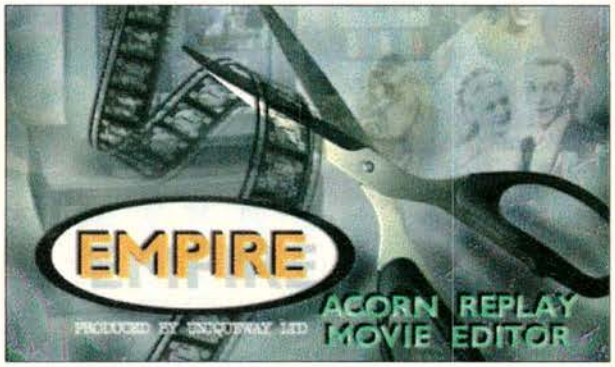
This is a single-width euro-card module, well made and chock full of surface mounted components. There were three sockets on the back of the model I received for review, two for stereo sound and one for composite video.

There is a space in the panel for an S-VHS input and I believe that this can be fitted as an option. The job of this module is to digitise a colour picture and its sound in real-time. Not only that, the resulting images have to be shunted off on to a hard disk before the memory overflows.

Therefore it is quite understandable that you need a system with a high bandwidth. The manual talks of an application that will test your system's bandwidth to make sure it is adequate but, unfortunately, it was not supplied on the review disk.

The module was actually designed for A5000 and A540 machines, however, I used the more





● *Start Up sprite from Empire*

down-market A310. True it had been upgraded somewhat: Morley SCSI interface removable Syquest hard drive, ARM3 processor and RISC OS 3.1 operating system. With this I was able to work with a Mode 15 screen as it just wasn't fast enough to cope with the *standard* Mode 28 screen.

Having installed the module there is not much else to do. Loading the DIY software gives a quarter size window on the screen and any video and sound fed into the module will be shown by the computer.

A world of editing

Control boxes around this window will enable you to turn the picture into a grey scale one and choose whether you want to record sound, pictures or both. The box marked *scale* is for a feature to be added later this year.

When you come to the point in the video that you want to record, click the red recording button. The picture will only be updated every two seconds or so and you will hear the hard disk thrashing about for all it's worth.

You can pause and stop this operation and small counters keep track of how many seconds' worth you have digitised. Then you can use the normal desktop method to save your section of movie, or clip, to hard disk.

This file is what is known as a VIA file and is an uncompressed movie. You can play it back with the DIY software but it is still jerky, due to the way the software is written. At this point you could go on to compress this file to produce a proper Acorn Replay movie but it is more likely that you would like to perform some editing – this is where Empire comes in.

Empire is an application that allows you to cut and join movie clips, giving you frame-by-frame control over the final output. Unlike films, the original clips are not cut up but copied on to a master output track. Therefore, you can use the same clip many times in a movie.

The editing procedure is based on the system used to edit video tapes – with two input streams and an output stream. You mark the start and end of your input stream, push a button and it's transferred to the output. In this way, an output track is built up from the bits you want.

To help with this you have two other windows, the clip bank and a preview window. The clip bank – as its name implies – contains all the bits of the different movies that you want to join together.

To load it, simply drop the file on the board and a quick double click gives you a preview. You can also put a sprite file here where the first sprite can be shown as a title – this will not animate several sprites from the same file.

The edit window is full of counters giving the length of the clip you have selected and how far from the start of the clip that occurs. Most of the time I managed with a single input track, moving the clips on to it when necessary. However, using the second track can be time saving especially if you are cutting rapidly between two shots.

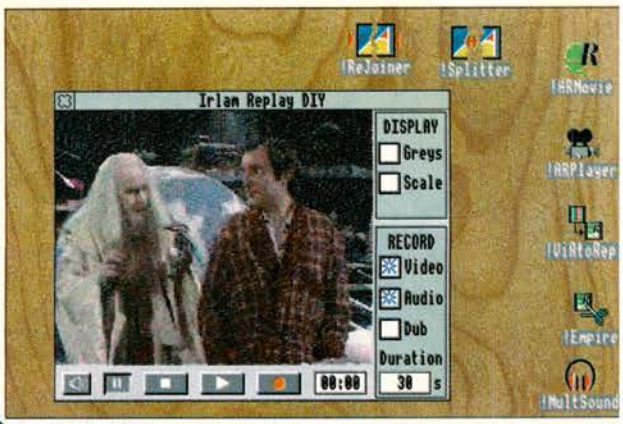
Putting it to use

Operation is fairly intuitive and there is an undo feature if the last edit did not go as planned. You can move to the exact point in the clip by either dragging the bar in the preview window or the frames in the edit window. However, I did find that each time I moved a clip from the clip bank to the edit window I had to preview it or operations did not always go as planned.

Similarly, deleting a section from a clip, required double clicking on

● *A captured frame from Replay DIY*

● *Frames from Hitch Hikers, with all related application icons on the pinboard*



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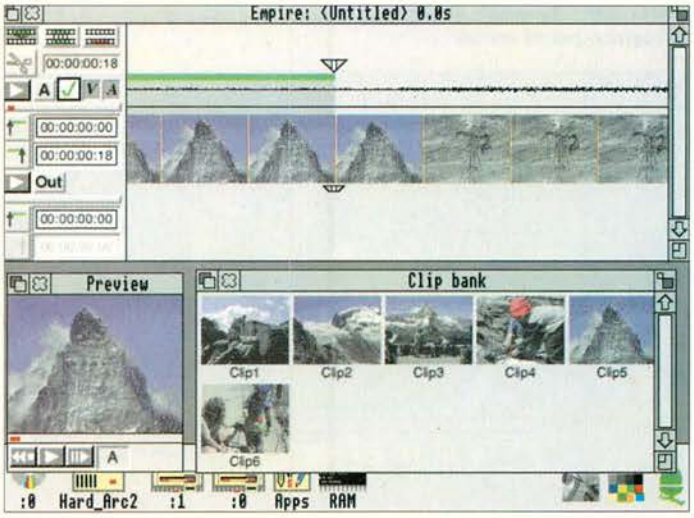
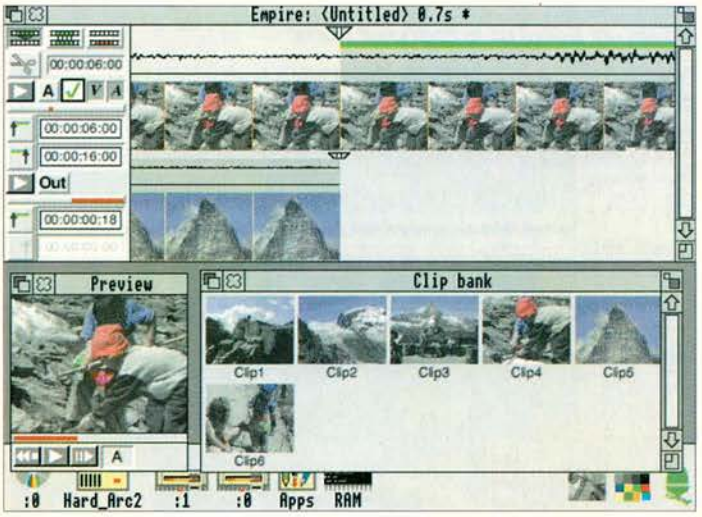
● *Start Up screen from Replay DIY*

● *The clip bank loaded up with all the movie clips you want to see*



● *The end position for an edit has been defined*

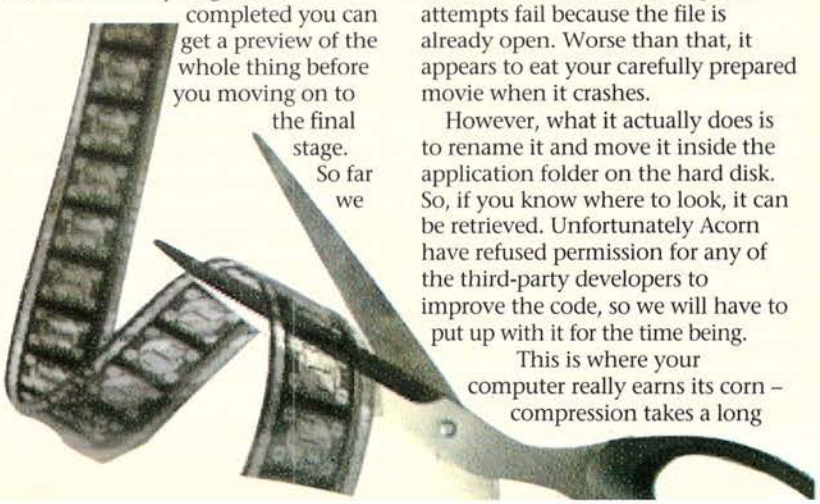


● *A new clip is added to the output*

➤

the time line as opposed to the normal single clicking. These are minor inconsistencies which are soon accommodated – but which could be ironed out.

When editing a movie you not only have to have all the clips on your hard disk but enough space to take the output track – about 20Mb a minute of edited clips. You can save the movie at any stage and once completed you can get a preview of the whole thing before you moving on to the final stage. So far we have an uncompressed movie file. The Acorn application !VIAtoReplay will compress this file and produce a much smaller Replay Movie. Unfortunately this has been written by the *boffins* in Acorn and is not very user friendly.



True, much of its operation is automatic, but error messages are terse and difficult to interpret. It even leaves the files open when it quits, with an error, so that subsequent attempts fail because the file is already open. Worse than that, it appears to eat your carefully prepared movie when it crashes.

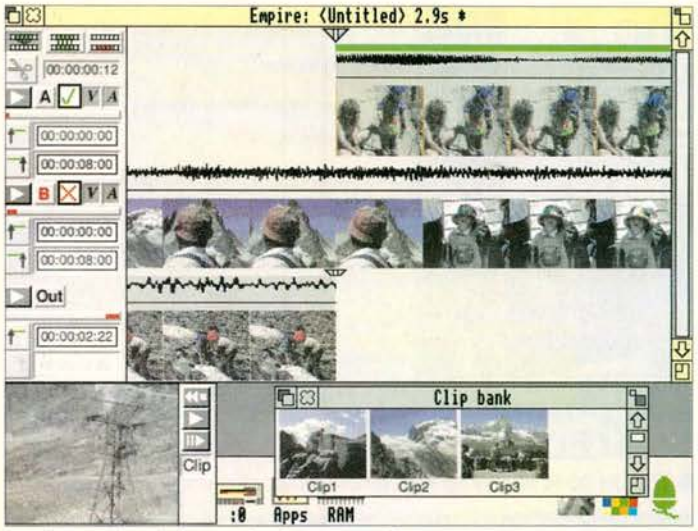
However, what it actually does is to rename it and move it inside the application folder on the hard disk. So, if you know where to look, it can be retrieved. Unfortunately Acorn have refused permission for any of the third-party developers to improve the code, so we will have to put up with it for the time being.

This is where your computer really earns its corn – compression takes a long time, about 10 to 20 seconds per frame. Now, that doesn't sound too bad until you realise that one second of video will take over eight minutes to compress. This is a job to be left running over a lunch break. As this is so computationally intensive, it is not a multitasking operation.

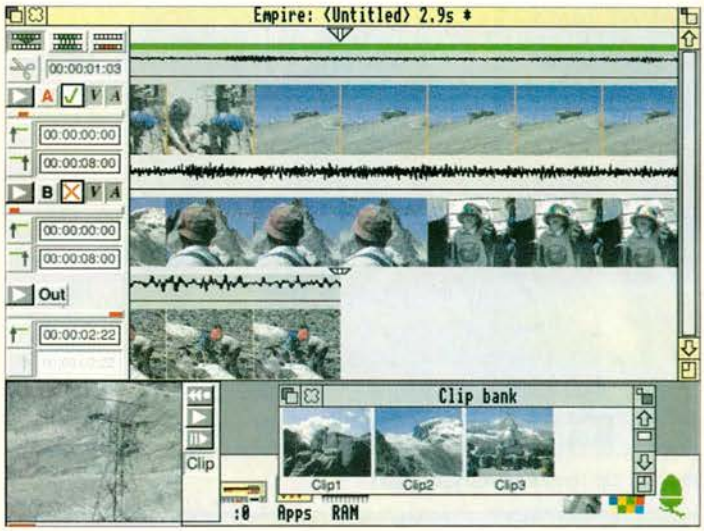
What happens is that the software tries to predict the next frame from the previous ones. So this is hard going at the start when there have not been any previous frames. The first frame is stored as a sprite and subsequently frames as the differences.

You see the two frames at the bottom of the screen and a sequence of incomprehensible numbers scroll up the top part. If the prediction is of the next frame is not good enough it says *fail* and has another go. Some frames can take up to five tries before it moves on to the next.

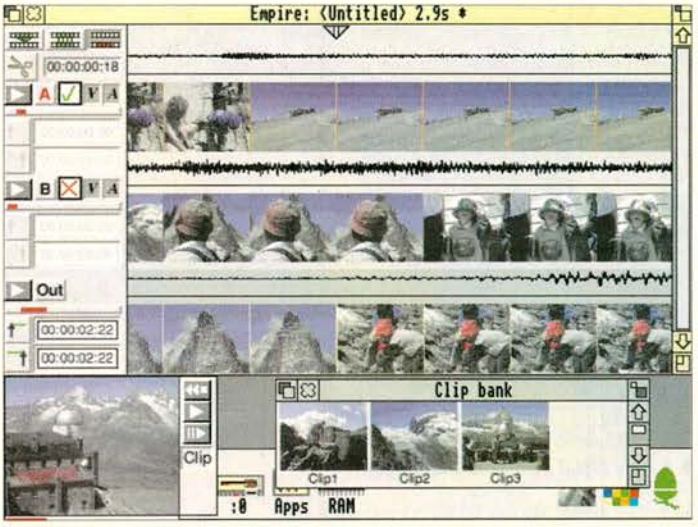
Unlike other systems it does not simply encode the difference in the numbers making up the frame but looks for objects to track and pan. In ➤



● *Clips are loaded on to both input tracks*



● *Insertion points are set*



● *Edits may be in Insert, Replace or Delete modes*

● *Final movie being replayed*

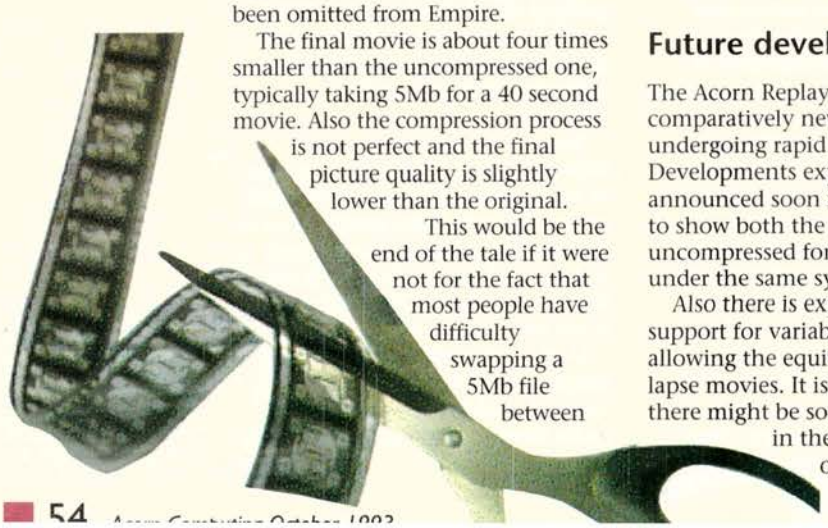
➤

fact, the Acorn system has been optimised for live action and I believe another system might soon be released that is optimised for animated action. One result of this is that video fades don't compress very well and as such a fade function has been omitted from Empire.

The final movie is about four times smaller than the uncompressed one, typically taking 5Mb for a 40 second movie. Also the compression process is not perfect and the final picture quality is slightly lower than the original.

This would be the end of the tale if it were not for the fact that most people have difficulty swapping a 5Mb file between friends. There are two utilities to help you with this – Splitter and Joiner.

As the name suggests Splitter will split a large file over several floppy disks. Then Joiner will paste together the file segments from the individual disks to reform the file on a hard disk.



Future developments

The Acorn Replay system is comparatively new and is undergoing rapid change. Developments expected to be announced soon include the ability to show both the compressed and uncompressed form of movies under the same system.

Also there is expected to be more support for variable frame rates, allowing the equivalent of time-lapse movies. It is also expected that there might be some improvement in the animation of sprite files.

Summing up

The systems worked quite well and gave me impressive results even with my *less than state-of-the-art* system. You do need a lot of hard disk space free – I used the whole of a 40Mb removable disk for my experiments but I could have done with at least 80Mb. The next question is that although it is fun, what use is it?

Well, like most developments, in its early stages we can only guess where its forte will lie. I can see it being used in both multimedia CDs and in-house networked presentation software.

One area I would like to explore is in the videotaping of physics experiments, allowing the student to replay freeze frame and single step to make screen measurements at the vital point.

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Efficacious in every way

Teri Paul puts some new effective utilities through the blender

ONE of the best things about public domain programs is that you're sure to find a utility somewhere to stop you climbing the wall when you've hit a particular problem. If not, there are a host of maniacal games which you can vent your frustration on.

However, this does lead to another couple of problems. When I have all my favourite applications and utilities loaded, I find a desperate need of both more ram and a second hard disk. Oh well, Christmas isn't that far off.

Return to the black hole

This is an updated RISC OS 3 version of the original Black Hole from Mark Greenwood which now uses the Filer Action windows and provides a quick and easy way of deleting files in a more stylish way than Mac trashcan clones.

After loading it on to the left of the iconbar you can dump unwanted files into it never to be seen again, wipe whole disks or just files, keeping directories intact. As you move the mouse across the icon it begins to swirl – as a warning of the dire consequences of a mistake at this point.

If you prefer you can bring up the Options window and change the icon to a recycling one as well as setting Black Hole 2 to delete locked files and other ways to make the program be as destructive or fool-proof as you want.

Black Hole 2 also gives you the option to retain directories and can be configured to keep a backup copy of any files it deletes in its Bin directory, how long you want to keep them and where the Bin should be situated.

It's truly multitasking and you can also save files from desktop applications into specified directories which is unusual in this kind of program. Extra useful bits and pieces include a vary nifty file find utility and a clock.

In the past I have resorted to the null: directory to get rid of things but this program is both more attractive and useful and I've already found the failsafe Bin directory worth its weight.

Security first

Having daubed infra-red marker over a variety of machines in past years to stop them being purloined, I was very interested by two programs by Anthony Brion, **UniqueID** and **Secure 3.**

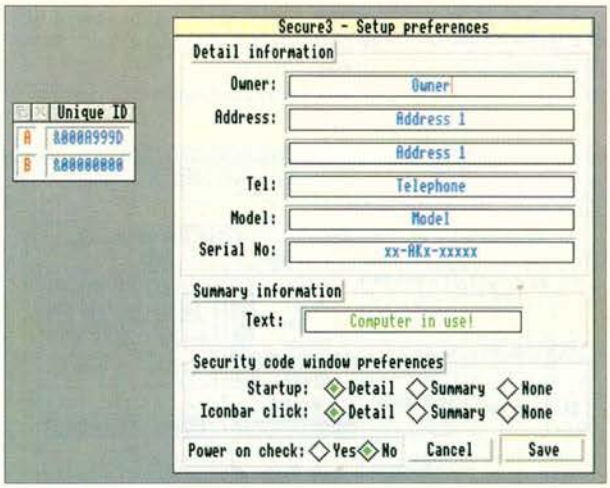
Anthony developed Secure on his A4 to cause any potential thief as much hassle as possible if he tried to use or sell the machine. By default the program loads on to the iconbar.

Alternatively it issues the security screen waiting for the right password.

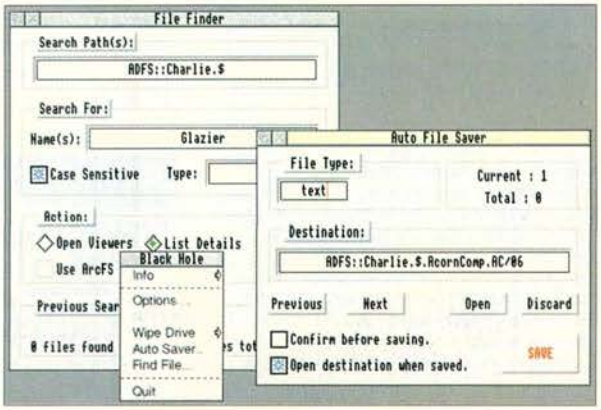
A detailed security window, shows your name, address, telephone number and so on as well as the computer's details and a message to prompt any prospective purchaser to contact the police if the vendor does not have the security code. Also the unique machine ID code – stored in a special chip inside the new Acorns – is displayed.

A second window demands a security code and as both these windows cover the whole screen, all access to the icons below is stopped. If by chance a running application sends one of its windows in front, the security window will be bought back to the top if the pointer leaves the window. Nifty.

From the same author is a simple program, Unique ID, which will tell ➤



● *Two programs to make your 32-bit machine as safe as houses*



● *Black Hole finds two useful extra features – File Finder and an Auto File Saver*

➤
you the identification number stored on chip inside the latest Acorn computers – A3010, A3020, A4000, A4 and so on. Useful for insurance claims and for schools or companies with a number of different machines.

Window cleaning

A new style window template editor – **Glazier** by Tim Browse – arrived on my desk recently courtesy of Gem PD. This is still in beta test form and is freeware rather than public domain – basically your conscious is tweaked to send money to Comic Relief if you use the program and you'll also get the latest versions of the software as soon as it is available.

Glazier is following a trend in new PD programs as it basically won't work under RISC OS 2. I did have some success with this version on our RISC OS 2 machines but the help file warned me to expect some strange effects.

The program boasts full control of windows – including anti-aliased fonts – as well as the ability to load and edit more than one file at once. Editing is via dialogue boxes and you can both move and resize multiple icons a pixel at a time using the cursor keys or type in x and y coordinates.

You can also close or resize windows when there are no close or resize icons and move windows despite the lack of a title bar – just some dexterous use of the mouse and Alt key. Naughty but nice. Added to this is drag and drop of icons between different windows.

If you drag a template file into an already loaded template window, Glazier will merge the new windows renaming them if clashes occur. Glazier is also quite forgiving so if you load a file with deleted icons you'll be told about it and asked if you want to get rid of them permanently.

When you load a Template file, Glazier maintains a separate sprite area for it. Dragging a sprite file to Glazier causes it to load it into the area. If only one file is loaded, Glazier will work out that the sprites belong to this file, but if more than one file – or none – are loaded, you're asked to drag the sprite file to the browser window they belong to.

Windows are displayed in an intelligent browser which has the same resize and selection policy as the RISC OS Filer. You can save/copy/delete/rename, or delete/save a selection of windows while double clicking displays the window on screen.

Your created windows are called User Windows and the menu is straightforward with details and hints given in the text file on creation and editing – interactive help is planned for a later version.

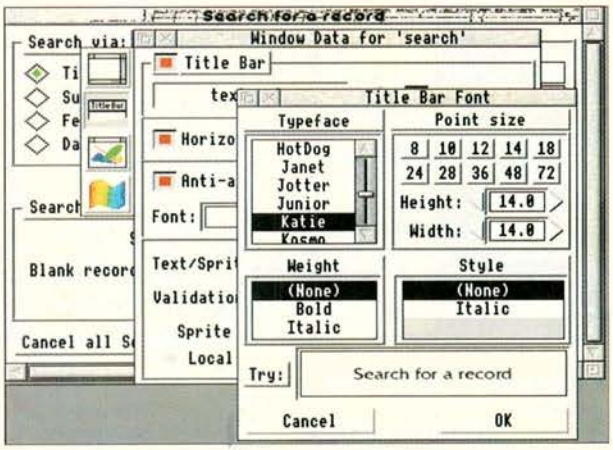
Window and icon editing is via dialogue boxes rather than menus which appear instantaneously and any changes are immediately reflected in the object being edited.

Glazier is highly usable and, if it comes up to expectations, it will be invaluable.

Putting this before the Boss – known for writing the occasional application and being a real cynic when it comes to utilities – resulted in the following accolade: "Glazier is very fast and intuitive to use, the font handling is superb and the instant updating is excellent. This is everything that the commercial package WindowEd should have been. I'd use it."

This one must be a winner.

● *Glazier's font handling gets it just right*



HOUSE NEWS

Equinox PD are closing down their operations over the next few months to find pastures new.

They still plan to supply PD software in the interim but ask that cheques be made payable to G Scott.

Useful extras

Screams of frustration disappeared the other day when I introduced a friend's 2Mb A4000 to **Close Windows** from Stuart Tyrrell. This useful little program isn't new but is very useful as it allows you to keep your desktop tidy by closing all the open windows associated with a given task.

You just click the menu button on the icon bar and moving the pointer over the arrow to the right of the Close option brings up a menu showing which applications currently have windows open. Clicking on one of these entries will close all the open windows which that application has on the desktop.

Unsaved work will be reported but if you can't see all of the window, or there is more than one window of unsaved data CloseWindows leaves them all open.

PD LIBRARIES

8-BIT HOUSES

8-bit Software, 1 Oakwood Drive, Heaton, Bolton BL1 5EE.
HeadFirst PD, 97 Chester Road, Southport PR9 7HH.
JJF PD, 49 Hollyberry Close, Winyates Green, Redditch, Worcester B98 0QT.
Mad Rabbit PD, PO Box 4, Crigglestone, Wakefield, West Yorkshire WF4 3XE.
Masterdisc, 2 Seaview, Hoylake L47 2DD.
Welsh Boys PD, 88 Queen Street, Barry, South Glamorgan CF62 7EE.

32-BIT HOUSES

3PD Swapshop, 66e Picardy Road, Belvedere Kent DA17 5QN.
Alpine PD, PO Box 25, Portadown, Craigavon BT63 5UT.
APDL, 39 Knighton Park Road, Sydenham, London SE26 5RN.
Arcaynia, PO Box 1927, Sutton Coldfield B74 3QZ.
ArchAngel PD, PO Box 41, Exeter, Devon EX4 3EN.
ARM PD, 109 Woodland Drive, Cassiobury, Watford WD1 3DA.
ARMistic PDSL, 136 Wellesley Road, Ilford, Essex IG1 4LJ.
Craig Beech PD, 30 The Deerings, Harpenden, Herts AL5 2PE.
Datafile, 71 Anson Road, Locking, Weston-Super-Mare, Avon BS24 7DQ.
Datastream, 34 Norbreck Close, Great Sankey, Warrington, Cheshire WA5 2SX.
Different Ideas, Eyton House, Eyton, Leominster Herefordshire HR6 0AG.
Digital Illusions, 20 College Road, Wembley, Middlesex, HA9 8RL.
Digital Phenomena, 104 Manners Road, Southsea, Portsmouth, Hampshire PO4 0BG.
DigiTech, 20 Downing Crescent, Bottesford, Scunthorpe, South Humberside DN16 3LS.
Gem PD, 15 Partridge Down, Oliver's Battery, Winchester, Hampshire SO22 4HL.
HeadFirst PD, 97 Chester Road, Southport PR9 7HH.
LowCost PD, 6 Furzeland House, Sheephouse Way, New Malden, Surrey KT3 5PH.
Naked PD, Fayence, Fulford Road, Fulford, Stoke-on-Trent ST11 9QT.
Planet PD, 37 Manor Drive, Berrylands, Surbiton, Surrey KT5 8NF.
Skyfall, PO Box 2220, Birmingham B43 5RZ.
Westbourne Services, 34 Bradley Street, Wooton-under-Edge, Gloucester GL12 7AR.

This month's featured PD

Program	Library
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Close Windows	Digital Illusion
Glazier	Gem PD
Secure 3	
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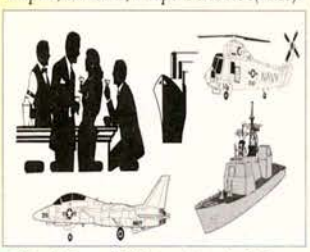
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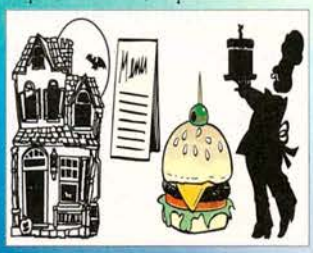
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Getting in touch

Clem Vogler begins a new series introducing you to the world of modems and baud rates

PERHAPS the first example of wide area comms occurred at the battle of Salamis in 480BC when a confederation of Athenian and Spartan ships won an astonishing victory over a much larger Persian fleet.

Military historians have attributed the Greek triumph in large measure to their use of signalling flags which enabled the Greeks to deploy their forces in a coordinated attack, picking off isolated Persian vessels.

This early illustration of the power conferred by comms confirms the importance for Acorn users in getting to grips with distributed computing. The problem is to understand and master the technology.

Many 32-bit computer enthusiasts beaver away at their machines for years, blissfully ignoring the pleasures and pitfalls of the serial port. Their podule slots bristle with interface boards while the lonely serial socket languishes unnoticed and unconnected.

After all, we were put off serial printer connections in the old BBC Micro days where parallel connections responded instantly but you had to send a stream of bewildering *FX calls to prod a serial printer into action.

The limitation of parallel connections – where each bit in the byte is sent down a separate data line – is that they have a maximum range of a few metres. Beyond this there is the risk of bits moving faster down one line than another and arriving in the wrong order.

With serial communications there is a single data line and the bits queue up to pass down it like wagons on a train. There's no way they can overtake and arrive out of sequence.

So for long distance comms down a phone line, you have to use serial data transfer. The trouble with phone lines is that they weren't designed for digital data. For a start they are analogue, not digital devices and they have a limited bandwidth just adequate for transmitting speech.

Computers usually communicate *asynchronously* which means that there's no synchronised timing between each end of the line. Instead information in the form of start and stop bits are added so that the receiver can identify the beginning and end of each byte sent down the wire.

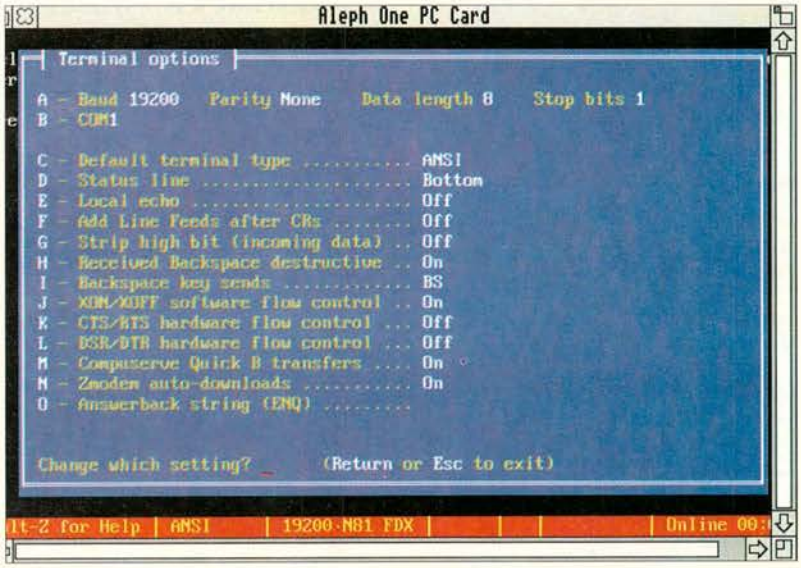
A simple data corruption check can be carried out using a *parity bit* and if this has the wrong value – one when it should be zero or vice versa – the data must have become damaged en route. The parity bit is either calculated as *odd* or *even*.

Asynchronous communications typically use 10-bit data format. Having one start bit is now universal but there are several allowable combinations of the remaining nine bits, including:

Word length	Parity	Stop bits
7	even	1
7	odd	1
7	none	2
8	none	1

You need to set your comms software to match the format used at the other end. It's worth noting that the 8-bit word length allows you to send and receive all the Ascii characters in the range 0 to 255 whereas the 7-bit word length only caters for the restricted set of characters 0 to 127.

The principles of serial communications were established with mainframe computers connected to a collection of teletype terminals to allow simultaneous access to several users. Terminals can communicate via a modem directly but if you are using a micro ➤



● *A typical menu found in communications software*

Clem Vogler has taught physics, electronics and computing at a number of schools and colleges.

His industry pedigree comes from working as a standards physicist for Marconi and as test engineer working on spectrum analysers and scanning electron microscopes.

you will need comms software *and* a modem.

The software is used to set the data format and transmission rate and a host of other variables, such as whether your keyboard presses are echoed on the local screen. It will also display a terminal window where you enter modem commands. The commonest set of commands are the Hayes or AT commands, of which *AT* itself is the simplest.

Inputting AT brings the system to attention and the modem will respond with *Okay* if your serial link is functioning. For the more ambitious, if you type ATD and your own phone number you'll hear dialling sounds followed by a *busy* message as you're on it.

There is a set of Hayes commands to change from tone dialling to pulse dialling, change the error detection protocols, re-dial the last number, turn the loudspeaker off, tell the time, hang-up and so on.

Terminal emulation

Your software will probably offer you a choice of terminals to emulate, commonly available emulations include Viewdata, VT100/102, and ANSI. If you make the wrong choice you find that your display is not showing the right number of lines, or colour, or that some of the less commonly used keys produce unexpected results.

Most bulletin boards use ANSI which uses 8-bits to provide the full IBM PC character set. On the other hand, if you are dialling into Prestel, you should select Viewdata which is a 7-bit terminal using teletext text and graphics. In general you should not expect your function keys to work unless your terminal emulation mimics the terminal defined for the host computer.

As there are hundreds of different terminals your software may not supply an exact emulation, though some software offers key redefining, so you may be able to overcome problems if you know what escape sequences the host terminal's function keys send.

Once sorted out all this you should be able to log into bulletin boards and hack your way into the Pentagon and other soft targets. However *downloading* (receiving) files, especially non-text (also called *binary*) files is more demanding.

We're back with protocols again and, of course, you have to use the same one as your host. Common protocols include XModem, YModem, ZModem, Kermit, CET and Ascii. They differ in the sophistication of their error checking, speed and ability to transmit files in batches. XModem is the original – ZModem is a fast and reliable successor and is to be preferable if available on your host.

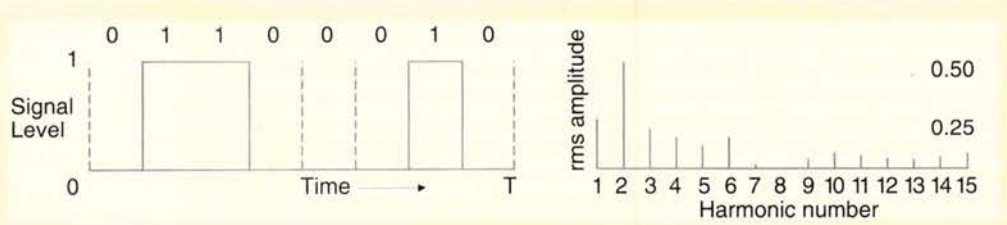
You pay your money ...

Modems cost from a few pounds to several hundred. What's the difference?

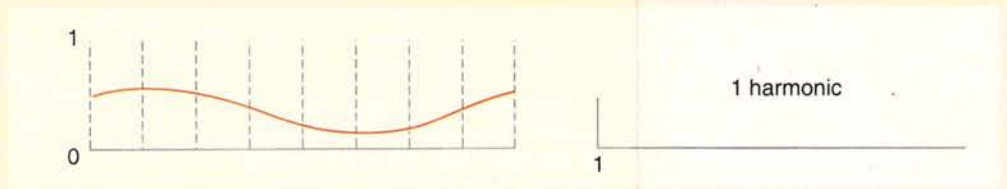
At rock bottom you get an acoustic coupler into which you shove the phone handset. Nearby sounds cause interference and really this is not worth considering.

Next up comes the dumb modem which you plug into your phone line. These usually only support slow data rates like V.21 (300 bps) and V.23 (1200/75 bps). The modem is controlled by the computer and its performance depends on the sophistication of your software. Refinements include autodialling, allowing you to dial from the keyboard or from a prepared file.

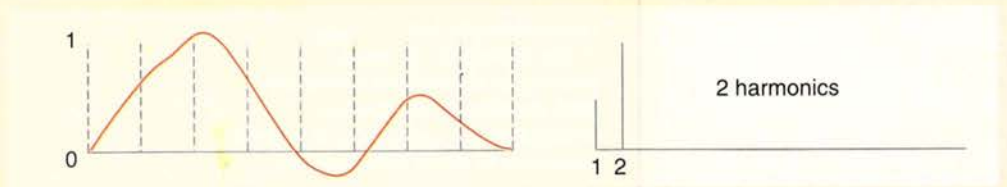
Serious users will want an



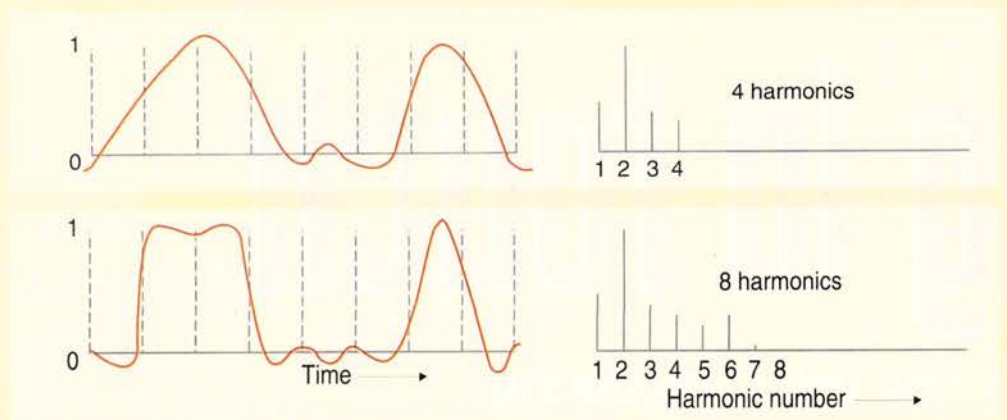
Transmission can be as a voltage varying with time



The signal is transmitted by a channel whose bandwidth is so low that only the first harmonic can pass



The attempt at transmitting at 9600 bits/sec has degraded the square wave



You can see the effect of progressively higher bandwidth channels which can pass higher harmonics

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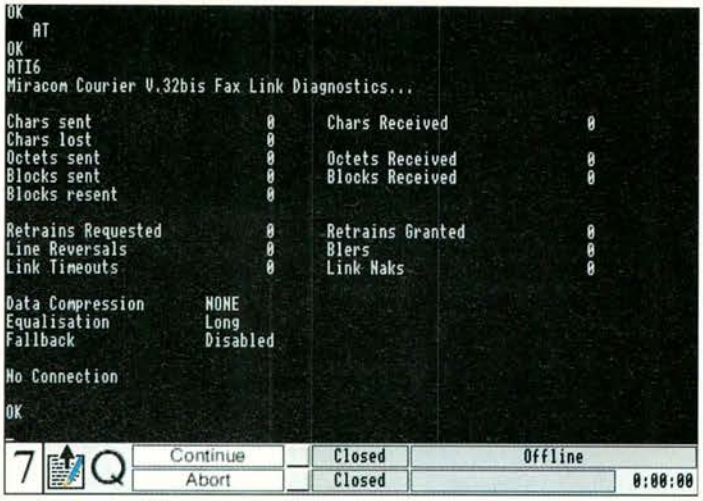
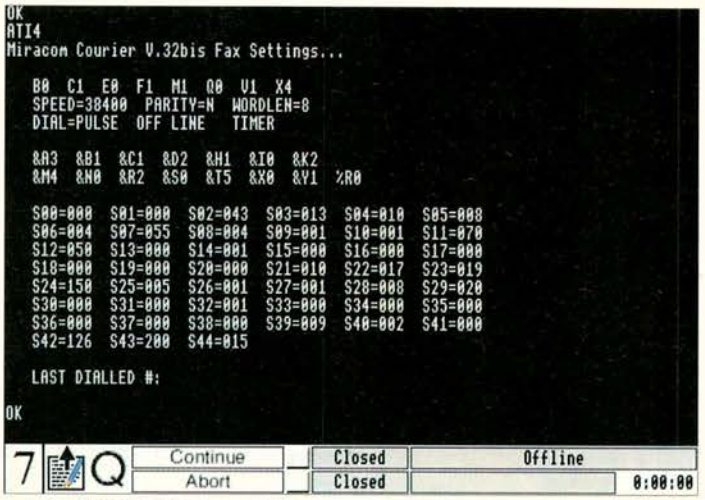


● *Intelligent modems report errors as well as...*



...remembering their use settings

➤ *intelligent* modem with a microprocessor which performs requests without reference to the computer and plenty of ram to store your preferred settings, bulletin board numbers and log-in scripts.

One problem at this level is that you are spoilt for choice. You can control transmission with your modem or you can allow your comms software to do the controlling. It's easy to get twisted up with what's controlling what.

At the top end you are buying fast data transmission rates of 14.4 or 16.8 Kbps, made possible by clever error checking and data compression. I use a Miracom Courier V.32bis made by US Robotics which is packed with features such as call duration reporting, call logging, stored settings printout, loopback testing for fault diagnosis and link rate negotiation whereby the speed of a remote modem is automatically matched.

There is also fax capability to take into account and adaptive speed levelling where the modem automatically adjusts its data rate to the maximum the phone line quality can handle.

Even so, I get plenty of *download failed* messages when trying to grab binary files from some remote, alien Unix database.

Phone lines just weren't made for digital comms. One day we will all have ISDN2 and can chuck our modems away and plug in directly to a digital network. Comms life may become a little easier but it will be a lot less fun.

● *Next month we'll complete the general overview and get to grips with the hardware used in comms*

One small byte

In a computer the Ascii character *b* is represented by the number 98 which can be stored in a byte. A byte is composed of eight bits which can be 1 or 0, and *b* is made of the bit sequence 01100010. We can transmit this as a voltage which varies with time. This is produced as a neat square wave which doesn't survive transmission without rounding off the corners.

Using a complicated mathematical technique called Fourier analysis, a square wave can be represented as a collection of smooth sine waves of increasing frequency called harmonics. A perfect transmission line would have an infinite bandwidth and would be able to transmit all the harmonics, thus preserving the shape of the original square wave.

Real transmission lines have a cutoff frequency *f* which may be set by the physical nature of the transmission channel or may be intentionally introduced by the circuit designer using filters to share out the available bandwidth between customers.

Ordinary phone lines have a filter induced cutoff frequency of about 3KHz which is adequate for transmitting speech, but less good for music. Signals below the cutoff frequency are transmitted undiminished. Above the cutoff frequency signals are strongly diminished and effectively removed. The range of frequencies which can be passed, from *0* to *f* is called the channel's bandwidth.

Suppose we try to transmit data down a phone line at a rate of 75 bits/sec. We will be able to send about nine or ten 8-bit bytes in a second, so the frequency of the first harmonic will be around 9 or 10 Hz. The second harmonic will be double this, about 19Hz and we will be able to transmit all the first 320 harmonics before we hit the cutoff frequency of 3KHz and our square wave will still be very square.

Try it at another common modem frequency of 9600 bits/sec. Now we are sending 1200 bytes/sec and so the frequency of the first harmonic is 1200Hz. We can just squeeze in the second harmonic of 2400Hz before we hit the cutoff frequency.

Our attempt at transmitting at 9600 bits/sec has degraded our square and the modem at the other end will need some clever electronics to interpret this and recreate the original bit pattern. If the line is noisy – which it always is, to some extent – the signal is further degraded and the task becomes harder.

You can see now that using an even faster modem frequency of 38400 bits/second is guaranteed to fail as even the first harmonic of 4800Hz exceeds the cutoff frequency. So why do manufacturers provide such high operating frequencies?

First, because using multi-bit encoding reduces the baud rate required. Secondly the computer/modem link generally has a higher bandwidth than the phone line. Clever modems receive data from the computer at a high rate and then apply compression techniques to strip out redundant data, much like the file compressors used to squeeze megabytes on to an 800k floppy. The modem then sends the stripped datastream down the phone line at an acceptably low rate.

Bits and bauds – multi-bit encoding

The number of times per second that the signal changes its value – its voltage – is called the baud rate. The rate at which bits are transmitted is called the bit rate and is measured in bits/sec. If we use binary logic with just two voltages representing logic levels 0 and 1, the bit rate and the baud rate are the same.

If instead we use four different voltages each signal value conveys two bits so the bit rate is double the baud rate. To achieve a bit rate of 9600 on a telephone line a common method would be to encode the data in 4-bit groups sent at 2400 baud.

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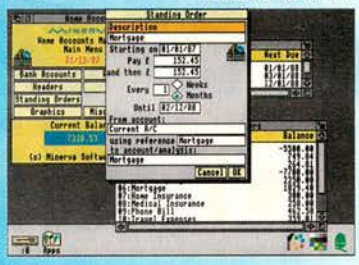

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Mike Cook takes on another set of your Acorn technical queries

AGENDA

- Faulty serial ports
- Creating 1.6Mb on normal density disks
- Fitting programs into the BBC Micro
- Intermittent faults
- Using PrintEdit
- Changing an 5.25in drive for a hard disk
- Cleaning sticky keys
- Using a PC hard disk

Q MY A3020 has 2Mb of ram and the standard high-density disk drive. Recently, I accidentally formatted a standard DS/DD 800k floppy disk using the 1.6Mb format. To my surprise it was accepted and appeared to format correctly and claims to have 1,585k free.

I have repeated this several time with the same results and I have also successfully written to and read from files up to 1,584k in length on a single disk. I am completely baffled. Why is this happening? – **Robert Elisha, Bromley, Kent**

A *A high density disk simply has more tracks per inch that the normal density. It's a little like the old 40 and 80 track disks. In essence the disk itself is the same, the difference is simply a magnetic coating.*

However, as manufacturers want to charge extra money for a high density disk they will tell you tales about the magnetic coating being finer than normal disks. Whether this is true or not I am not sure. My experience is that I have never had any trouble formatting a normal disk as a high density one.

Yet I have heard tales that they are not so reliable being more liable to disk errors. My experience of even top-quality high density disks show that they are not as stable as normal density disks.

Most makes of computer recognise the high density disk by the hole on the opposite side of the disk to the right protection notch. You can easily convert a conventional disk by inserting a hot soldering iron through this point. It does appear that the Acorn machines don't need this subterfuge – this may be a fault or a feature.

Incidentally, as disk manufacturers switch to high density specifications you will find them putting the same sort of media in their normal density disks therefore with certain brands you'll get exactly the same recording medium. You pays your money and takes your choice.

Revitalising an IBM drive

Q I HAVE an Archimedes A440/1, running RISC OS 3.14. I also have an old IBM compatible which has an IDE hard disk. I would like to put the IDE into the Archimedes and dedicate this to the PC Emulator and related files. Can I do this?

What leads/interfaces would I need and is there likely to be any problem fixing it inside the Arc or using it since it has been PCed to death. Could you foresee any other problems in this exercise? – **Barry Watts, Hendon, London**

A *With any standard bus interface, IDE or SCSI, you need two sides to the interface circuit: One from the computer and the other to the bus. Your existing card is designed to plug into a PC and by definition that part is useless. Then you have an IDE to hard disk interface and, in theory, that part can be used.*

I believe that Ian Copestake used to sell an IDE interface without any drives. So it could be possible to salvage part of your hardware and use it. However, it could be designed in such a way as to not allow the separation of the PC interface from the IDE bus.

Avoiding the eprom

Q HAVING just written a screen dump program for my new inkjet printer I am having a problem making the program run in the background. It needs 2k and is written in BASIC and Assembler to run on my BBC Model B.

I want it to run in the background so that it can be used with existing software. Currently my program can only be tagged on the end of unprotected software.

I do own an eprom programmer, but would rather keep the software in the high memory of the computer. – **Jonathan Mansfield, Markfield, Leicester**

A *When you say you want the printer dump to run in the background, I assume that you want it available from programs without having to append the code. Normally this*

➤

Making the right connection

Q I HAVE recently acquired a second-hand A5000 and am most impressed by its capabilities. I had hoped to be able to use the A5000 with my modem and older Amstrad CPC computer – with RS232 serial port – using the RS423 port. However, I have not been able to achieve this.

I understand that when the port is idle, it should default to a logic 1 represented by -5v at RS423 level. I have measured +4.5v on the TX pin of the port suggesting that the port is active sending a break character. Further, when trying to send characters to the serial port, the machine *hangs* regardless of the state of the handshaking lines.

The computer is about 18 months old with an issue 1 main board and has been upgraded to RISC OS 3.1. I have been told that issue 1 boards may have had a problem with the serial port. Is this true?

There are a large number of links on the board. What do they do and is it possible that a link is in the wrong position? I am almost certain that the serial port has never been used and all other functions of the machine seem to be working perfectly. – **Adam Parsons, Hosham, West Sussex**

A *Yes, there is a problem with the early A5000s and the serial port. Acorn are reluctant to admit this in public but I have heard of several cases of serial ports not working.*

The solution is quite simple, however, and involves a modification to the main logic board. If you take your computer to an Acorn Service Centre they should be able to do this for you. Ring Acorn on 0223 254254 to find who is nearest to you.

➤
phrase refers to multi-tasking systems where the printer dump will run and you can get on with other work on your computer.

There are several solutions. I am not sure whether your code is 2k of machine code or a combination of BASIC *and machine code. However, the first step is to get the dump entirely in machine code – have one machine code entry point to produce your dump.*

It will then probably occupy less than 2k and so you can put it in an area of the machine that you are not using. My favourite place for this was at &A00. However, you only have 256 bytes here.

If that is not enough you could start at &900. This contains the cassette buffer, RS423 output buffer or extended envelope storage area. Even more space can be had if you don't want the soft key buffer, that is the definition of the function keys &B00.

*Finally a further 256 bytes are available from &C00 which stores the font character definitions from 224 to 255. If all this is not enough space you can simply move PAGE up and *LOAD your printer dump at the old PAGE address.*

Be warned that wherever you put it you are likely to run into trouble with protected software. This is because this sort of software assumes it has the whole machine to play with and could very well use any memory location. Then your only choice will be to put it in an eprom.

You can write to Mike Cook c/o Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

He will answer any questions about difficulties you may be having with your machines, mainly those to do with hardware. If you want a personal reply ensure that you enclose an SAE with your letter.

Key clean-up

Q I READ of Mr Broughton's problems in the May issue regarding *phantom key presses*. I have experienced similar problems three times with my Master when:

- A shift key is permanently on
- F1 is not making contact every time
- The letter K was repeating when pressed once.

My simple solution – courtesy of Watford Electronics – is to gently prise off the key top, give a quick and careful squirt of WD40 to the exposed key, replace the key top and give a few presses.

This cured the problem in all cases and is well worth trying before attempting to replace the keys. – **John Govier, Benfleet, Essex**

A *Thanks for the tip. However, I have found that WD40 is fine but leaves a sticky non-drying deposit. This in turn can attract dust and give future trouble. I prefer to use a combination of switch cleaner and electrolube.*

Make sure the switch cleaner is not the type that attacks plastic by testing it on the outside of the key. Then just put a drop of electrolube down the plunger. The nozzle will allow you to apply the lubricant exactly where you want it.

Uncommunicative printer

Q I WANT to use my A3010 with an Oki Microline 84 printer but I can't find anything in the instruction manual indicating just what the Oki is compatible with.

With my old Amstrad I had to use an PC printer driver but I couldn't print any form of graphics.

I am beginning to believe that this printer is too old to expect any miracles. However, if you could offer any useful advice – even scrap it – I would be most pleased. – **Michael Searle, Shoeburyness, Essex**

A *Printer codes have assumed a Tower of Babel-like complexity. Acorn have come up with what is perhaps the most comprehensive solution to this in the new* RISC OS *using PrintEdit. However, this is not easy to use and requires a knowledge of your printer codes. These codes should be available in the handbook which came with the printer, if not you are sunk.*

The first thing is to get your computer talking to your printer. Wire it up, go into BASIC *and type VDU 2. Now anything that appears on the screen will go to the printer when you type Return and this will determine whether the basic system is working.*

Now go to one of the standard printer drivers and try to modify that to match your requirements. This is explained in the RISC OS 3 *application guide.*

It is likely that your printer will have no graphics capability and so you will be restricted to draft printing and you will not be able to use fancy fonts. If it's all a bit too much for you, I'd recommend you join a local computer club as it's the sort of thing that more knowledgeable members are willing to help with.

Off and on

Q MY SONS have had an Electron for many years and though obsolete it has provided many hours of pleasure from numerous type-in games – our favourite being Snapper.

Recently, though, while I was playing on it, the screen froze and no key would change it. If the system was turned off and then on again red and yellow bars appeared across the screen.

To get the screen back to normal it had to be switched off for 5 to 10 minutes and then I had to go through the same rigmarole again. Can you provide any assistance?
– **J. McLaughlan, Brands Hill, Slough**

A *Most intermittent faults are due to intermittent connections. This is especially true the older the computer gets. As your computer only goes faulty when it has warmed up it is most likely that the problem lies in the expansion of some connector or socket.*

The simple solution is to open up the case and press down all the ICs and ribbon connectors and see if that cures the problem. Failing that, a more systematic approach with test equipment would be called for. However, this might cost more than the computer is worth.

There is an old saying: ***Old computers never die they merely get corrosion in their joints.***

Bridging the gap

Q I HAVE a Watford Electronics bridge unit containing 3.5in and 5.25in disk drives which I originally used with my Master 128 but it is now attached to my A3000. As I no longer use the 5.25in drive, it occurred to me that the space it occupies might make a good home for a hard drive.

The bridge unit contains a 12v and 5v power supply. How can I tell whether the PSU has enough capacity to operate a hard drive? What power supplies do hard drives need, anyway? Assuming the power supply is adequate, what kind of drive should I use – SCSI or IDE? Can I use ADFS with it or do I need another filing system? – **John Devine, Bolton, Lancashire**

A *The power supply requirements for hard drives vary quite markedly, with newer models taking much less power than older ones. However, in general you should be talking about the same power requirements if not slightly less.*

As to the type of interface that is one where people – especially suppliers – get into very heated discussions. An IDE is low cost but can only be used with a hard disk. Personally I think the extra flexibility a SCSI interface gives you is well worth the extra cost.

Whatever interface you use you need software to access it. This is normally supplied on the interface cards and so is not usually a separate item.

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Races: Don't lose your shirt

NEXT time you're tempted to go down to the racetrack and lose a small fortune on the back of a three-legged no-hoper, save your cash and take a party of family and friends to a virtual racetrack in an exciting contest of skill and luck ... well, just luck really.

First you enter the names of the party – up to 10 can take part – and each player is presented with £100 of electronic money. One by one you are presented with a betting slip – just type in the number of the horse favoured to win and the amount you want to bet. Naturally you can't bet more than you have – no credit is allowed.

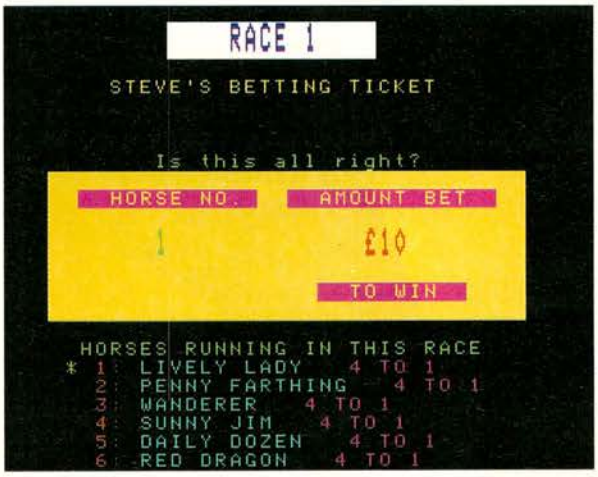
Are all bets placed? After a short, tension-filled wait the race is under way. You are reminded of which horse you're betting on, with an appropriate comment if you've bet everything. Accompanied by appropriate sound effects the horses travel across the screen.

Sometimes a horse will stop and turn red, indicating that it has fallen – don't worry, it isn't hurt and will run again in the next race. The others run on and eventually one will cross the finish line with a loud whinny.

If a bet was on the winner your stake returned, plus winnings calculated by the stake multiplied by the odds. Otherwise you lose the stake – sorry! After each race the odds on each horse are adjusted according to whether it won or lost.

If anyone loses all their money they are retired from the game, and races go on until only one person remains. You can then start a new game with the whole crew.

Bruce Goatly



● *Place your bets please*

● *Win, place or show – it's all down to the horses*

Heatseeker: Horizontally challenged

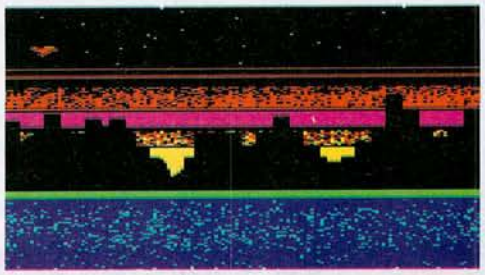
IT'S a funny old universe, one minute all's quiet and then thousands of aliens come pouring out of the sky intent on destroying humanity and once again only you can save the world.

This time the aliens fly in horizontally and you must zap them with a laser. You can move all over the screen but collision with an alien can seriously affect insurance premiums.

The controls are:

Q	Left
W	Right
P	Up
L	Down
Space	Zap

Andrew Weston



Compress: Files come under pressure

DEVELOPING methods to achieve better and better data compression is a popular pastime and one of the older techniques is Huffman encoding. It involves finding a set of variable length bit patterns to represent the data. Frequently used characters are given short codes and infrequent ones, long codes.

A tree, built from the frequency information, forms the basis of both the encoding and decoding algorithms. As an example, consider the string, including spaces, in (a). First, count up the number of times each character occurs, (b).

Next, find the two smallest numbers. In the example, there are four with one – I will choose W and Y because they are first in the list. Each is given a bit value, 0 or 1, and combined to give a single element with a frequency of the sum of the two components, (c).

The process continues, repeatedly finding and combining the smallest elements. It is possible that they are already composites. It makes no difference, marriage still occurs, (d) shows this happening. Eventually, there will be only one massive compound, the encoding tree, (e).

To get a code from this, find the route, from the root, to the character. The bit values in the order they are crossed make up the character's code. For example, following the tree from the question mark to Y passes first through 1, 0, another 1, then 1, giving 1011, (f).

The encoded message is the concatenation of the new codes in the order they appear in the original message, (g). Using one byte per character the text would occupy 128 bits (16 bytes x 8 bits per byte). With Huffman encoding, only 49 are needed – it is 38 per cent of its original size.

The same tree is used by the decoder. Starting at the root, each bit is read and used to decide whether to go left or right at the next fork. Eventually, the process will end up at the character being represented, which can be output. It then returns to the root and continues decoding until all the bits have been used up.

Files produced by practical Huffman systems always contain more than raw data alone, the decoder needs both a description of the tree, and the number of bits it should process.

File length is a problem because computer data is stored as bytes – the last bit can occur anywhere within the last byte. One approach is to add an extra stop code, effectively giving 257 possible byte values to deal with. No problem to the Huffman algorithm in general, but to an eight bit CPU, ideal for dealing with up to 256 states, the extra code can degrade program performance, and increase the size.

The method that *HUFFC/D* uses is to incorporate the size of the original source file at the beginning of the compressed data. When *HUFFD* has output the correct number of bytes it stops, ignoring any excess.

After the byte count, *HUFFC* stores the tree. Not a complete representation, just enough to allow reconstruction by the decoder. The lengths of the codes are adequate for the purpose. Instead of choosing the two smallest frequencies, you pick the two largest lengths. The new length is the average of the two minus one.

Listing I is an implementation of the Huffman technique. It is a single assembly language source which produces two pieces of machine code that are used as star commands.

The first, called *HUFFC*, is the compressor. It takes two filenames: One is the file to be compressed, and the other, the name to call the compressed data. For example, to squash a file called *DOG*, calling the result *PUPPY*, the command would be **HUFFC DOG PUPPY*.

The decompressor is called *HUFFD*, and is used in the same way as *HUFFC*. For the above example, **HUFFD PUPPY DOG*.

As an extra, I have included Listing II. It creates *HUFFSC*, which is a minor variation on the decoder. It takes one filename, a compressed data file, and will decode it directly into screen memory. To recall a screen, select the correct screen mode, not Shadow, and palette settings, and type **HUFFSC compressed filename*.

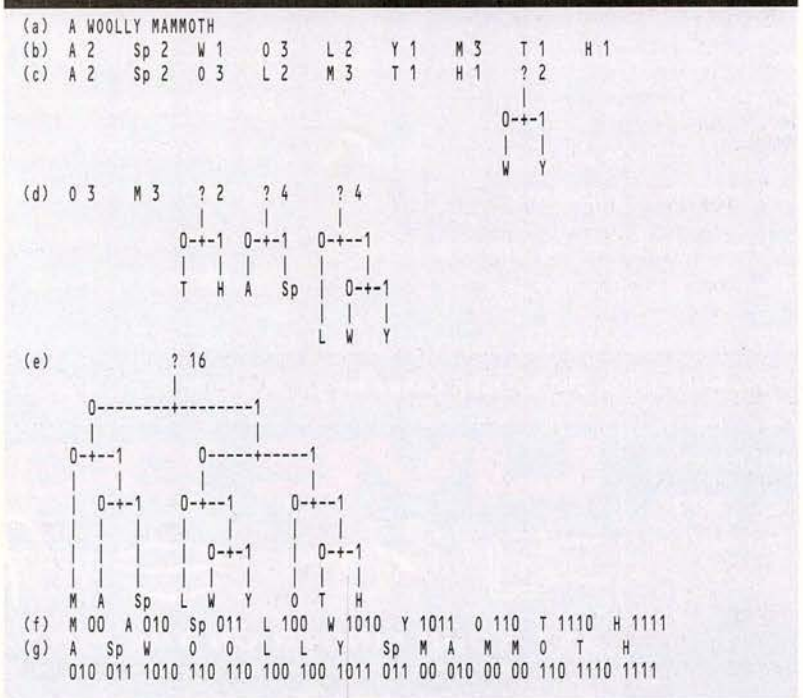
Although Huffman encoding is a valid compression technique, by today's standards it is not particularly effective. Compared to 32-bit machines' commercial and public domain data compressors the resultant files are still oversized. So, why bother?

Some of the most effective data compressors do use Huffman encoding, but not on its own. In particular, PKWare's PKzip method 8 and GNU's gzip on the PC both use a technique that combines Huffman encoding with a sliding dictionary that is very effective for most files.

● *Next month, answers to some unanswered questions. What is a sliding dictionary? Could it be achieved in a swing park? So until then, don't let the pressure get to you.*

Andrew Bennett

The various stages of Huffman encoding



Reference

Huffman D.A., 1952, *"A Method for the construction of minimum redundancy codes"*, Proc. IRE 40:10, pp. 1098-1101.

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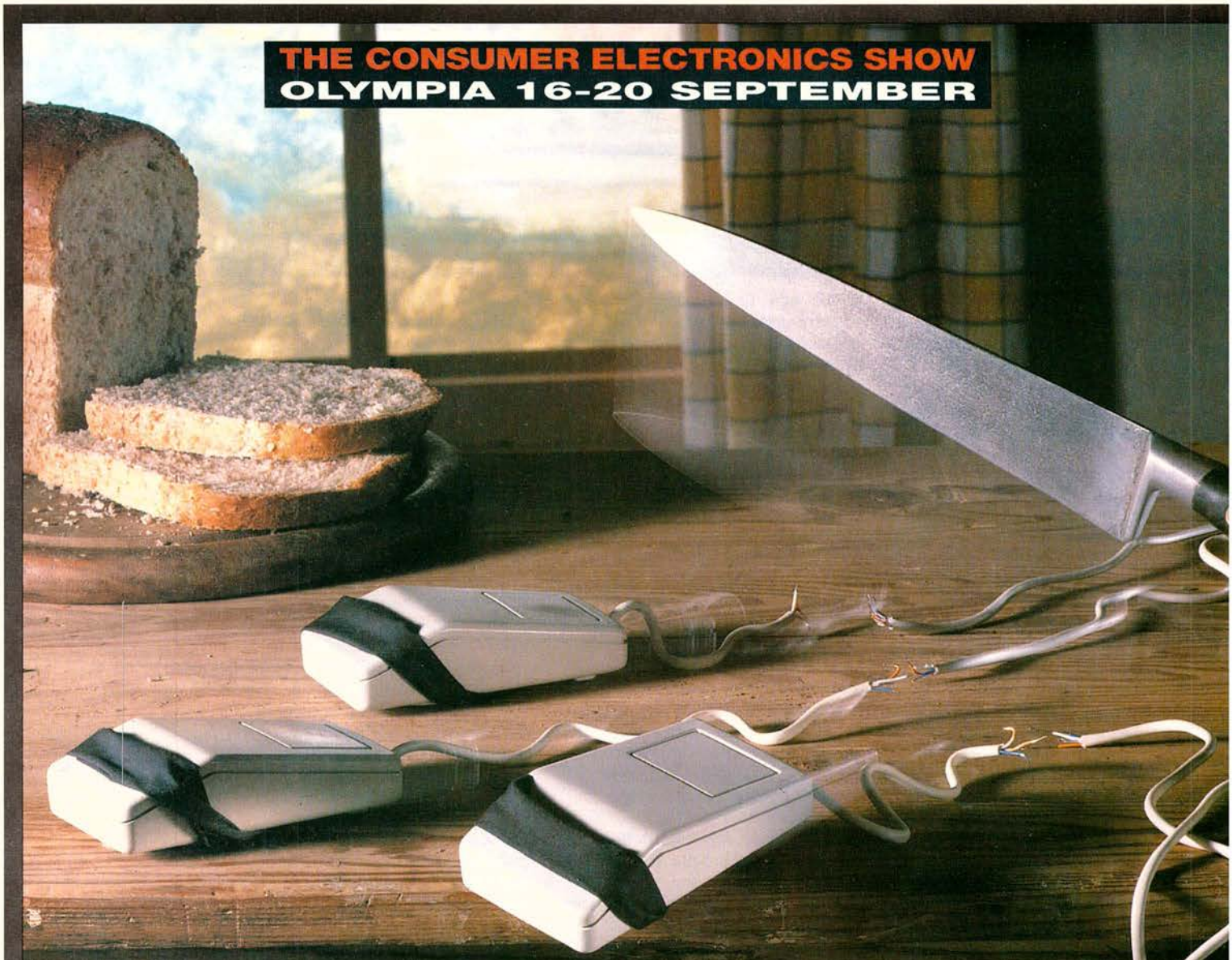

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From software to softwear

Steve and Anne Bruntlett look at some of the possibilities for textile design

HOPEFULLY you've had time to produce some textile designs since the last article so now we're going to look at some of the possibilities for textile design, from the straightforward to more sophisticated techniques and processes.

The illustrations here have been provided by student-teachers on the PGCE (Art & Design) Course at De Montfort University. Thanks team.

Printing can take the form of normal colour ink jet or ribbon ink printouts to see what the design looks like but different types of textile inks and ribbons can be used. One textile fabric ribbon can be used in any dot-matrix printer and be ironed on to nylon fabric. This gives excellent results as long as you remember to flip your design before printing out.

You can also use a new type of ink for colour ink jet printers called *sublimatic ink*. This works like a normal ink pack though you need to do a couple of prints once the colour and black packs have been installed to flush the normal ink through the tubes to the jets.

Printing is done in the usual way with the resulting image ironed on. The best fabric for this is a poly/cotton mix, which should be washed first to get rid of the finishing so that the inks will take properly. Ironing fixes the image on the fabric.

Flexible

You'll need to experiment with cloth types and iron temperatures to get the best results but it's a very flexible way of working. You could produce a complete image or a border round a table cloth using printed out motifs as you would with conventional transfers.

You could then embroider over the top if the printed motifs were being used purely as a guide to stitching or combine embroidery – hand done or via the POEM system on your Archimedes – with the colour motif to enhance the detail.

If you're tempted to put fabric through an inkjet printer – forget it. It produces really nice results on silk and some cottons but has the potential to wreck the drive mechanism if bits of fabric get stuck on the way through.

● *Experimenting with digitised images in textile design*

You can lightly spray mount silk on to paper and feed it through in a more stable way but it's still risky and since the introduction of sublimatic inks – even if they are 20 per cent more expensive – it's not worth bothering with.

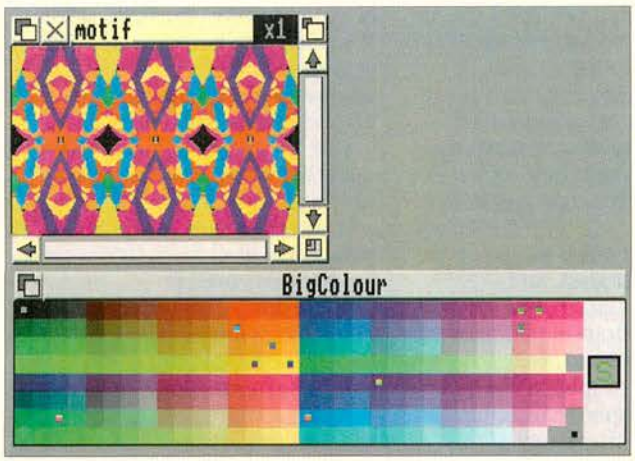
Even when you've ironed a design on to the fabric you may be able to print a further but fainter image on to fabric and you'll still have a printed image to use in other work or for reference although it will be the wrong way round now for most purposes.

If you only have access to a monochrome dot-matrix you could print your design and produce a photocopy to iron on to give a usable outline similar to that produced with a transfer. This can then be completed with fabric paints or pens to produce a more hand finished result relying on artistic skills rather than the computer.

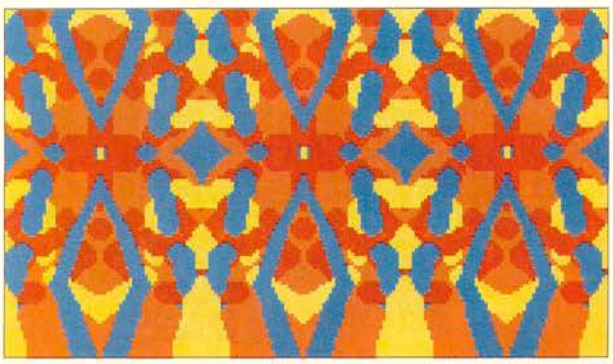
Some textile designs could be changed to an outline version using edge-detection techniques, printed and filled in by hand using fabric paints or pens.

I rather think that this is a better way of proceeding than just ironing on a computer-based print no matter how well conceived. It's also a lot cheaper.

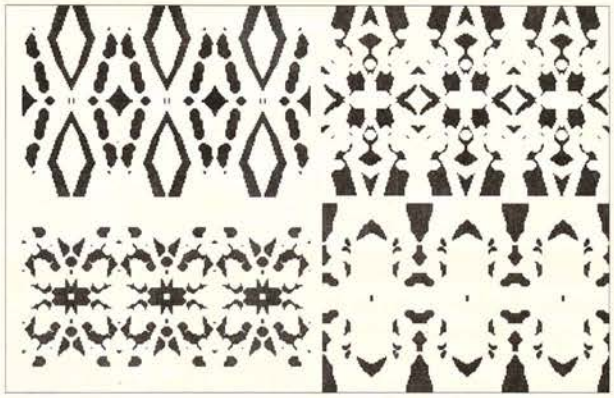
Perhaps the most complex method of computer-based textile design is screen-printing. Textile designs to be screen printed need to ➤



● *The original design and colour menu showing the colours used*



● *The design has now been simplified to four colours*



● *Spot colour separations produce a screen for each colour*

● *Revelation ImagePro easily creates Cyan, Magenta, yellow and Key – black separations*

➤

go through a colour separation process to produce one screen for each colour.

One commercial method is to prepare four screens for black, magenta, cyan and yellow which when combined in the final print will reproduce any number of colours used in the original.

Packages such as Revelation ImagePro, ArtWorks and Artisan 2 have built-in options to do the separations for you – it is not difficult to do, though time-consuming, if you just use Draw and Paint.

ColourSep from ICS allows you to produce colour images on a monochrome printer by outputting one colour at a time and swapping inks. So it should have uses in producing colour separations if you haven't a program which has such facilities.

Remember if you haven't got a colour printer but PostScript each separation and save them on PC disks, companies such as Awards Plus (0761 437043) will print them on to a T-shirt for you.

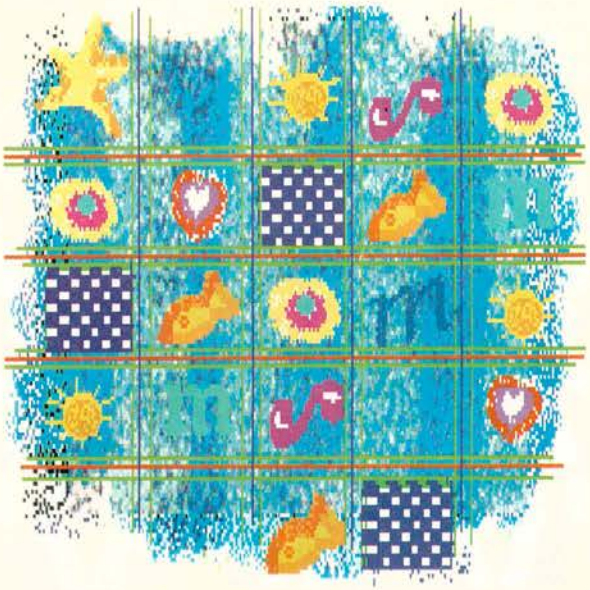
More suited to school or home use is to use a few spot colours – one colour for each of the colours on the textile design so that you might use yellow, red and blue in the design and produce a screen for just those colours.

Whichever method you choose, laser print the screens to A4 size with registration marks to acetate and use these as stencils for the photosilkscreen method. You can get the equipment and materials from large art materials shops or educational suppliers.

The motif needs to have only a few colours as each requires a separate screen. Some paint packages have a menu option to show which colours have been used in the design. My original motif had 12 so I used the global colour fill option in Artisan 2 to group some of the colours, reducing the design to four.

Next I filled in the red, in black and the others in white to produce the screen. Filling the yellow as black and the other colours in white produces the yellow screen and so on. You end up with four screens in black representing each of the colours which can then be printed on acetate and used as a stencil.

● *Freeform textile design by Michelle Cullen*



More accurate

Add registration marks before you print for a more accurate way of working. Though if you print the screens using Revelation ImagePro you can set an option to add registration marks automatically during the printing process. Briefly, the photosilkscreen process involves coating the printing screen with light-sensitive emulsion and letting it dry.

The acetate stencil is placed on to the surface under glass, and exposing the screen to ultra-violet light for a few minutes hardens the emulsion where it still shows.

The screen is washed in warm water to gently remove the areas of emulsion below the stencil as they've not been exposed to ultra-violet light they are still soft and can be lifted off leaving a gap in the covering of the screen which exactly matches the design on the acetate. The screen is dried and used for printing. With registration marks on the stencils it's possible to get quite accurate results as long as you don't use too many colours.

Alternatives

You can always print the colour separations on paper and cut out the stencil by hand. This can be a very effective, if not totally accurate, method. Try and keep the design simple, though, and avoid making the image too bitty or complicated. As with most computer-based image production you have to create work bearing in mind the method of output.

One area of textile design work you could get involved in quite easily is CAQ (computer-aided quilting) as long as you have some rudimentary quilt-making skills.

One project under way is a quilted version of a drawing of the gatehouse at Stokesay Castle. The original DrawPlus drawing has been simplified, changed to portrait format and printed in sections using Vector's tiling print option.

The resulting pattern was used to cut out the pieces of the quilt which are completed in the normal way. It's amazing what you can do once you start making connections with computer-based and conventional art and design techniques.

One important point to bear in mind is that what we've covered is only a small part of textile design and repeat pattern design at that. A whole area of surface pattern design hasn't been covered.

There are possibilities for textile design of a more freeform nature which need exploring if you are to gain a balanced approach to textile design but that's beyond the scope of this article.

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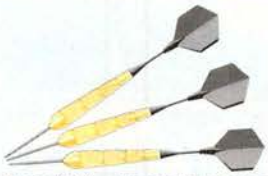

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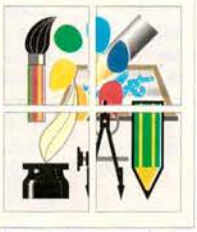

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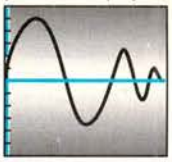

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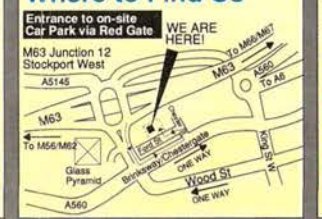

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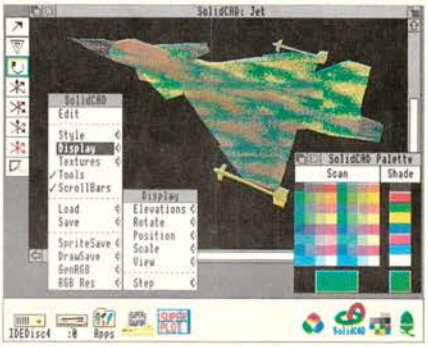

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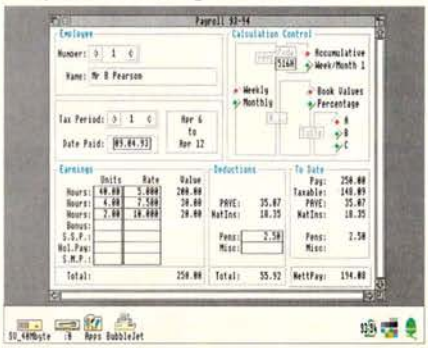

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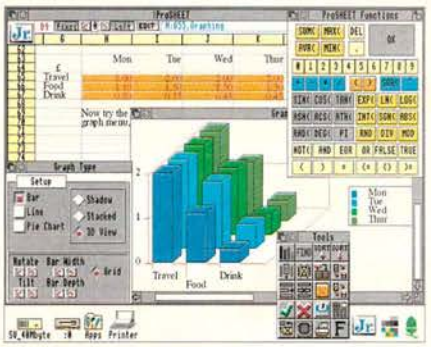

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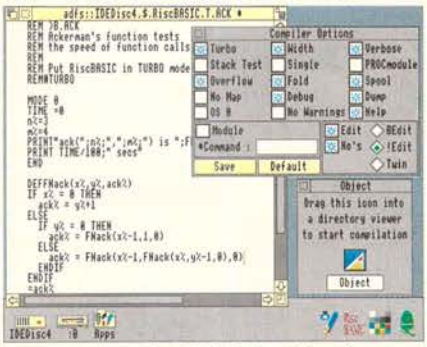

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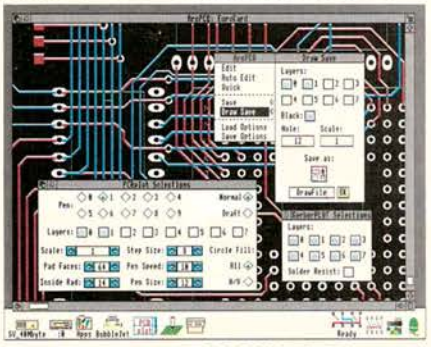

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Sounds familiar

Ian Waugh looks into sequencing for absolute beginners

IF YOU enjoy making music with your Archimedes – even at a low level using Tracker-type programs or Maestro – the time will come when you wonder what could be accomplished by hooking your Arc up to a synthesiser.

In the next few articles we'll attempt to answer these questions, taking you from basic principles through to the creation of quality arrangements.

There's only so much you can do with the machine's internal sounds and Tracker programs.

To progress beyond these and develop more sophisticated musical ideas and arrangements we need to use Midi-compatible instruments and more powerful sequencer programs.

We skirted Midi in part four of this series in conjunction with Maestro and Clares' Rhapsody. In fact, Maestro is a good place to start experimenting with Midi – as it's free – but be aware that it's not the most flexible of sequencers so don't let the program limit your expectations.

First principles

But we'll start at the very beginning so if you know nothing at all about Midi or sequencing, join us here.

The concept behind computer-based sequencing is similar to recording on a multi-track audio tape. If we run through the basics of audio multi-tracking, you'll have a good idea what computer-based sequencing is about.

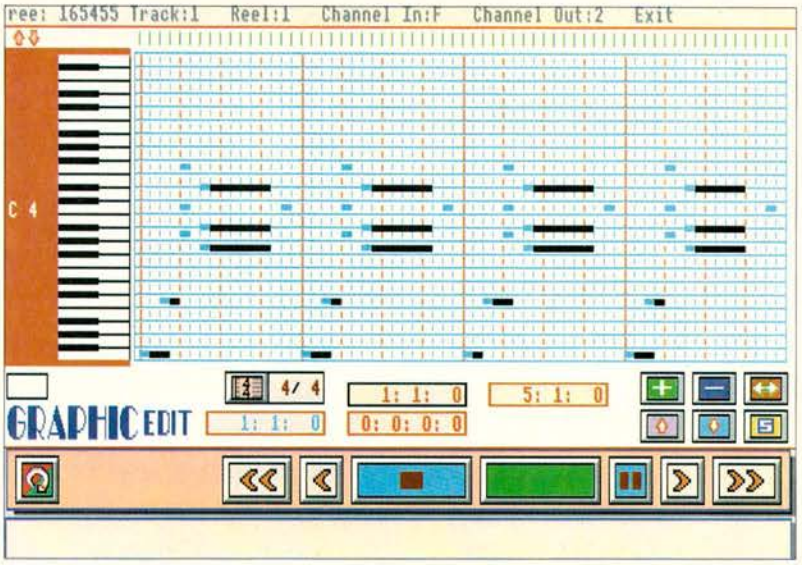
A standard cassette recorder records two parallel audio tracks to produce a stereo image on playback. A multi-track tape recorder may record 4, 8, 16 or 24 parallel tracks on tape up to 2in wide.

Usually a different instrument is recorded on each track – bass on one, piano on another, drums on a third and vocals on a fourth.

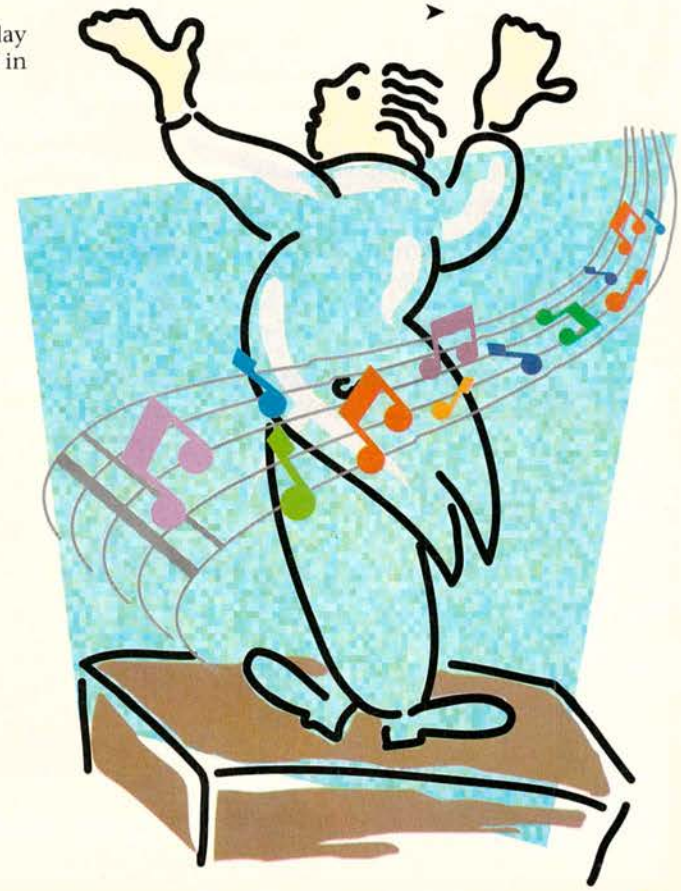
If you want an instrument to play back in stereo it must be recorded in stereo on two tape tracks.

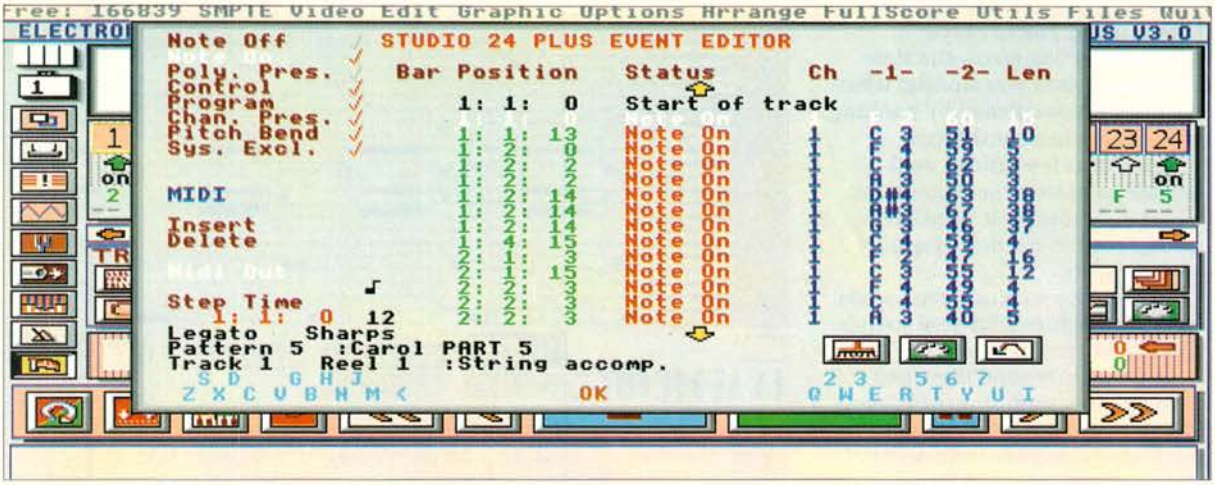
Each music part is often recorded separately so if it isn't quite right it can be recorded again without disturbing the rest. You can also *punch in* to a track to rerecord just a bar or two which may be wrong, although this requires a certain amount of dexterity.

When all the parts of a song have been recorded they are *mixed down* on to a two-track machine. This is a real-time process and involves



● *EMR's Studio 24 Plus' graphic edit screen shows the notes as bars alongside a piano grid*





● *Studio 24 Plus' event list includes a filter (top left) which lets you select the type of events it will display*

➤

sitting at a mixer console and adjusting sets of faders – which control volume – and pan pots controlling stereo placement as the music is recorded from the 24-track machine on to the two-track.

It's a skilled job. However, computer-automated mixers are now quite common. They remember any changes you make and duplicate the fader movements while you concentrate on another set of tracks. The two-track tape is known as the Stereo Master and it is from this that the record is cut – another process altogether.

Midi in a nutshell

MIDI is an acronym for Music Instrument Digital Interface. It's a communications protocol – not totally dissimilar in concept to the Hayes command set used in communications software – which allows music instructions to be transmitted from one device to another.

Due to the perversity of the acronym we refer to the actual device which does the receiving and transmitting of the data as a Midi interface and not a Midi.

Most musical keyboards – even those costing around £100 – have a Midi interface. When you press a key, the instrument generates a Midi Note On message which it transmits through the Midi Out socket. When you release the key it generates a Note Off message.

Virtually every keyboard function generates a Midi event. These include moving the Pitch Bend or Modulation wheels – if the keyboard has them – changing the sound by pressing a different preset button and pressing a sustain pedal on an electric piano, for example.

All this data is digital – the D in Midi – and can be read by another keyboard or Midi instrument or captured and stored in a computer via a Midi interface. Being numbers, it is easily edited and manipulated.

Sequencers versus multi-track recorders

The number of sequencers and music programs for the 32-bit machines is not vast but it's growing all the time. References in this article to *most sequencers* and *some sequencers* are necessary, as not all sequencers have the same features or functions. Later on there will be a Sequencer Check List so you can decide which features are important for you.

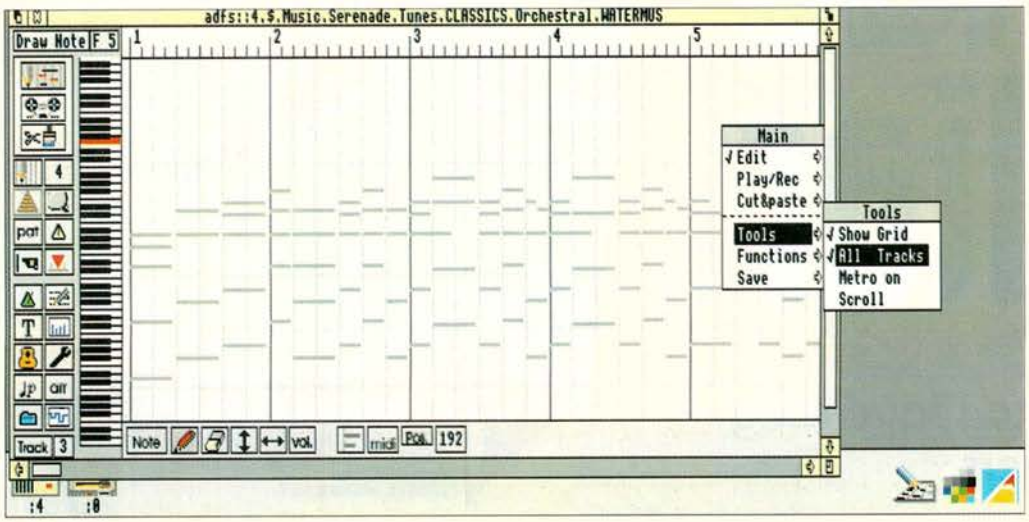
Computer-based sequencing has many similarities to audio multi-tracking but also many differences. Most sequencers are designed to operate like an audio multi-track recorder with record, play, stop, pause and fast forward and rewind controls. This is a throw-back to the *old days* when it was felt musicians would be more comfortable with a system they were familiar with.

Most sequencers also retain the concept of a track although these are far more flexible than audio tracks as we shall see next month.

One of the major differences between audio recording and sequencing is that audio recording records sound – anything that you can feed into a microphone you can record. A sequencer only records digital data which is produced when you play a keyboard or other Midi-compatible instrument. Check out the Midi box if you're not familiar with the concept.

The important thing to note is that with Midi all music information is converted into numbers. You record the notes

● *Clares' Serenade grid editor lets you see one track or all tracks at once*



played, the program changes you make, the movements of the pitch bend wheel, but what you don't record is the actual *sound* produced by an instrument. This is one of the major differences between audio recording and sequencing.

What happens on playback?

The sequencer transmits the note data and all the other nuances of performance it has recorded and a connected instrument will play it using the *currently selected sound*. This is an innate feature of Midi – if you select another sound on the keyboard, the Midi data will play back using that sound.

Using a sequencer you can concentrate on recording the correct notes and select the actual sound later. Record a melody line and then see if it sounds best on a trumpet, a trombone, a violin or a piccolo. Unlike audio recording, sequencing gives you the flexibility to select your sounds *after* recording.

So how do sequencers display their data? All music events are stored internally as numbers. Fine for the computer but not particularly helpful for humans. However, sequencers translate the data and display it in an easy-to-understand format.

In fact, sequencers can show data in several different ways. We've already looked at music notation and for many musicians, it's the best and most natural way of music communication.

But many musicians, from amateurs right through to some professionals, can't read music and there are two alternative displays in common use – the Grid Editor and the Event Editor.

The grid editor takes the form of – yes, you guessed – a grid which represents the notes on a keyboard. The pitch is generally in the vertical plane and the horizontal plane is the time axis.

Notes are shown on the grid as oblong bars – the higher up the screen, the higher the pitch and the longer the bar, the longer the note. The grid is divided into musical bars and beats such as quarter or sixteenth notes so you can see how each note sits in relation to the beat.

The event editor or event list shows data in a more numeric form but this is usually accompanied by a description, in English, of what the events are.

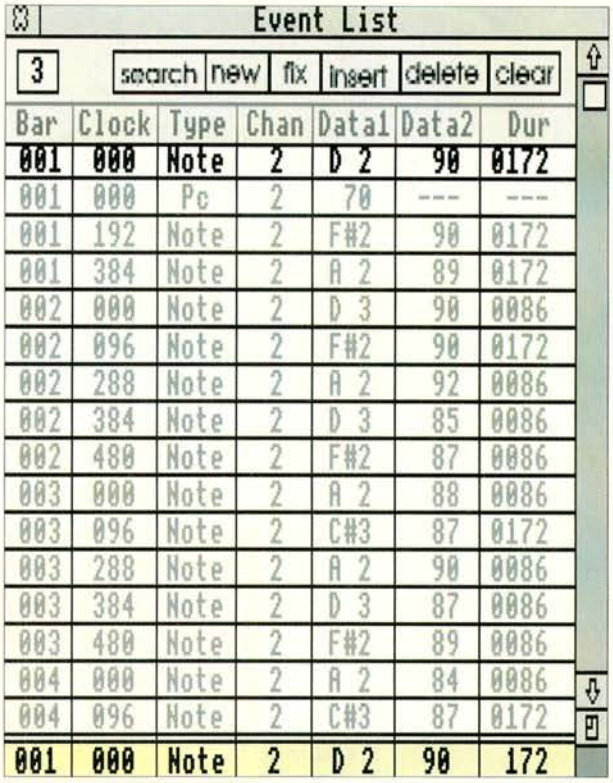
A typical event list will show the bar number and subdivision of the bar that each event begins on. It will tell you what type of event it is – note, patch change, pitch bend and so on– along with other associated information.

For example, if the event is a note you will want to know what its pitch is, how loud and its duration. If the event is the result of a pitch bend wheel action you want to know by how much the wheel was moved.

As each and every event is stored and displayed as a separate piece of data, you can pick out any one and edit it. If you hit one wrong note while playing a busy passage you can simply correct it in the sequencer.

You don't have to re-record it or try to *punch in*. You can alter any aspect of a note from its pitch, duration and volume to its position in the bar.

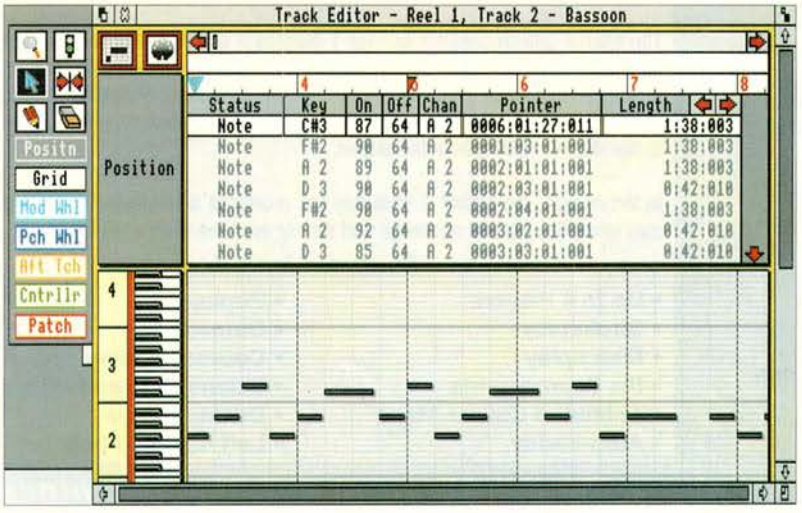
As each event is individually accessible, you can also create music by entering notes directly into the sequencer a step at a time. This is known as step-time entry.



Bar	Clock	Type	Chan	Data1	Data2	Dur
001	000	Note	2	D 2	90	0172
001	000	Pc	2	70	---	---
001	192	Note	2	F#2	90	0172
001	384	Note	2	A 2	89	0172
002	000	Note	2	D 3	90	0086
002	096	Note	2	F#2	90	0172
002	288	Note	2	A 2	92	0086
002	384	Note	2	D 3	85	0086
002	480	Note	2	F#2	87	0086
003	000	Note	2	A 2	88	0086
003	096	Note	2	C#3	87	0172
003	288	Note	2	A 2	90	0086
003	384	Note	2	D 3	87	0086
003	480	Note	2	F#2	89	0086
004	000	Note	2	A 2	84	0086
004	096	Note	2	C#3	87	0172
001	000	Note	2	D 2	90	172

● *You can edit the events in Serenade's event list at the bottom of the editor before making a permanent change to the list*

● *Next month we'll see how sequencers use Midi to create multi-part music.*



● *Inspiration can show the event list and grid editor in the same window although you can't edit the notes directly in the event list*

Midi data format

The insatiably curious may be interested to know what format the digital data takes.

Well, as with all things computerate the data is handled as a series of bytes, normally given in hexadecimal notation.

Different bytes represent different Midi messages such as Note On and Note Off, and there is a proprietary system of Status bytes and Data bytes which ensures that the maximum amount of information is imparted with the minimum number of, er, numbers.

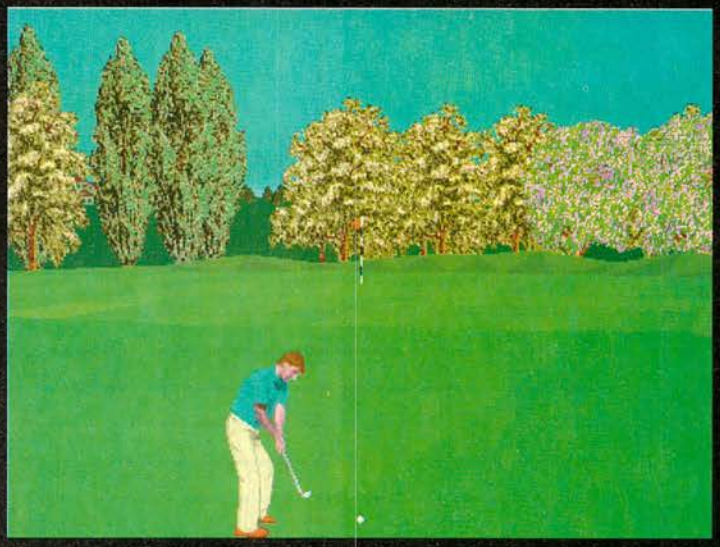
The mentally insane may derive some satisfaction from knowing, for example, that the following list of hex numbers is actually the Midi message to turn on the D above Middle C with a medium velocity:

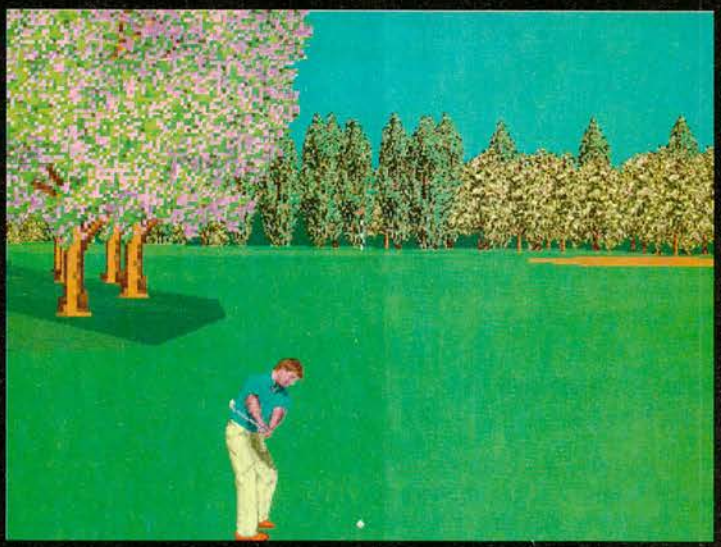
```
90 3E 21
```

Those with a less avid curiosity and with better things to do will be relieved to know that most sequencers shield the user from such numbers and translate them into English equivalents such as Note On, Pitch Bend, Program Number and so on. Aren't computers wonderful?

Virtual Golf

'It's almost worth selling your clubs to buy it!'





No more power meters – you control your swing by moving the mouse.

Virtual Golf is not like any golf game you have ever played. Your shot is controlled by the movement of the mouse giving a degree of direct control and 'feel' that is unparalleled.

Power is gained by a smooth backswing and a good follow through but chip shots will require all the delicate skill and judgement that you need on the course. Hooking and slicing come into play by opening and closing the face of the club (mouse) and also by a bad swing.

As with the real thing your primary objective is to improve your handicap which starts at 28. When you are ready you can play assessment rounds (which can take you up as well as down) and as you progress you will gain the opportunity to enter the 6 increasingly competitive tournaments that are included.

The course (which consists of over 1 Megabyte of data) is based on Wentworth and includes hills, ditches, digitised trees, bunkers and paths to create an unsurpassed illusion of reality. The greens are varied and undulating to add to the challenge that putting demands on real greens and the ball convincingly responds to the slightest changes in the slopes.

In Virtual Golf, the author Gordon Key has produced a simulation that anyone can play and enjoy yet will challenge and satisfy even the most ardent golf fan.

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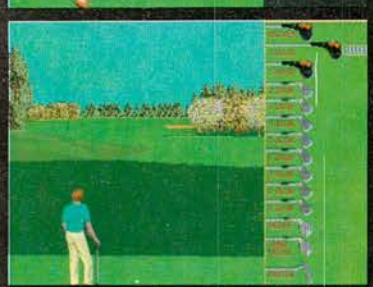

Quark

...the smallest particle strikes back

● *The space base is a real killer*

IT was proved quite thoroughly in the Atari ST market that the French have a way with graphics, and when Eterna were developing games for Acorn machines there was always a certain style to their work. Well now there's Quark from Psychotic.

It comes on two disks and although the packaging wasn't finished when I reviewed it we're promised that the manual will be colour printed. There's not a vast amount you need to know about the game: You can skip the requisite scenario – just five lines long – and just shoot it if it moves and even if it doesn't in some cases.

Plug in the first disk, click the icon and you're presented with a very impressive set of three icons: The main game, hard disk installation and a program to change the keys. The hard disk uses a key disk system so you need disk one at hand to play, but this is no great hardship and frankly the increased speed of loading more than makes up for any irritation.

Loading from floppy is pretty slow and there's apparently no fast bypass of the loading screens. Curiously the screens are offset to the right but they re-centre when it comes to playing, so do not adjust your set.

I think French people must think differently as the game control keys are very unusual: F12 to play and F11 to exit to the Desktop, with Right Control doing the work of Return.

Now if this were a standard vertically scrolling shoot-'em-up you'd hit F12 and that would be that, blast away. But it isn't – the next step is to select your ship from a range of six, with varying levels of initial (and maximum) shielding, basic speed, maximum speed and firepower.

As you play there are tokens to collect which increase your speed, your armour and the power of your weapons. Each ship has a number of forms which change as you increase in armour rating, something that you don't really notice at first, and the forms revert as you get hit so it's important to keep picking up those tokens.

The weaponry of each type of ship has a different style. For example the beginner's ship, *Scarabus*, is a straight fireball-blaster type, the *Star* has missiles and so on. With increased power the size and frequency of the weapon increases. Tag-on droids can also increase their firepower and you can gain additional lives.

One of the great things about the graphics is the detail, and not only in the ship design. All the aliens have their own details and behaviour, while your ship leaves a burning trail behind it when hit – this can be fixed by the appropriate token – just before blowing up.

● *Overflying an alien city*

There are so many different types of missile, laser, blasters, mines, bullets and zappers that it seems like no two aliens use the same weapon system, and why should they?

● *Reaching the final level – auto-fire is on*

Each level has its own style of graphic and within each level are section after section of different scenery, each highly detailed and worth looking at if you can spare a moment from the mindless destruction.

The best way to play this game – if you don't care about finesse, delicacy, artistry or skill – is to use a joystick with auto-fire. It's absolutely devastating and totally mega, just blowing everything out of the sky.

The music is very good and there's lots of it about: Over the title screens, the high score tables, the ship selector and, of course, different tunes throughout the whole of each level. Brilliant.

If you like mindless violence with excellent music and graphics, you'll love Quark.

Lazarus

● *Nasty flying creatures abound in this place*

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The Dungeon

...role and batter?

● *If one of your party dies, it's back to the last saved game – there's no magical regeneration in this*

ROLEPLAYING games for the Acorn 32-bit machines seem to have been rather slow in making an appearance. But the wait is over: Lovers of this kind of challenge can delight at the arrival of The Dungeon.

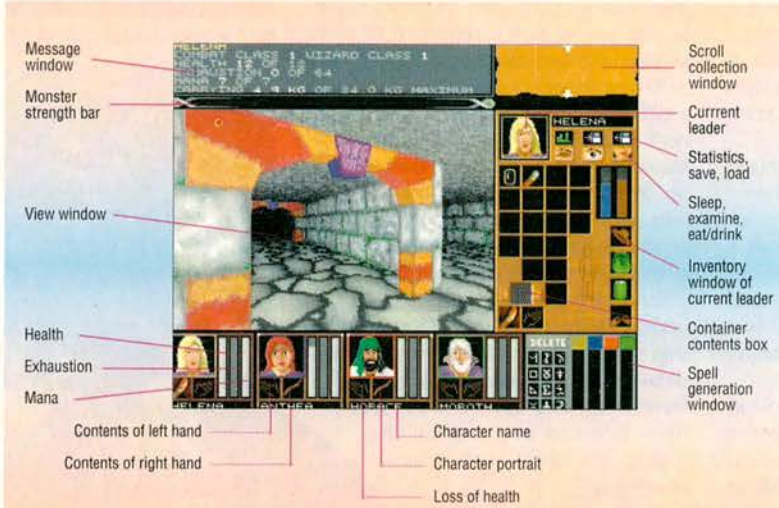
It has no competition, therefore it can't really fail and it sets the standard that others much match or, hopefully, better. So gird your loins, shoulder your backpack and sharpen your wits. A world of mystery, magic and mayhem awaits.

Your party of four novice adventurers is thrown deep into a dungeon below a burnt out monastery. You must attempt to guide them safely to the exit, overcoming all manner of hindrances, taking with you as many valuable as you can lay hands on.

You must make your way up the levels but wrong steps will send you down levels sustaining damage en route. By the way, this is a sneaky method of getting rid of the odd giant rodent.

The dungeon area is portrayed as a 3-D scrolling virtual world seen through the eyes of the team leader. The graphics here are excellent. The scrolling is slick, and movement around the corridors and chambers is a dream.

Everything you need to interact with this virtual world is contained on one screen. As a result the icons are rather small, but you'll soon get used to these and some may say it's better than flicking backwards and forwards between sub-screens.



● *At first glance, a welcome hoard of goodies. But it's not what it seems*

Control is via mouse or keyboard, but I found a combination of both was ideal, using the keys for movement and the mouse for everything else.

Starting out with nothing but the clothes on your back and a torch, you'll soon discover that a kind person has littered the dungeon floor with all sorts of useful goodies, from torches and the occasional weapon, to healing potions and the target of your search – the valuables.

Most hard working adventurers get hungry, thirsty and tired and your team is no exception. Keep your eyes open for flasks of water and items of food because these will be needed as well as regular periods of sleep.

Do remember to put out the torch before sleeping as light is probably your most important resource.

No self-respecting dungeon would be without its collection of monsters out to thwart you in your quest, and they abound in this one. But it's in this department that the game disappoints.

Apart from some spiders early on, I've seen more realistic sprites and better animation on the old 8-bit machines. However, they do give some good fights with the flying globes being particularly deadly.

Having said that, the gameplay more than makes up for the shortfall. Plenty of teasers will test out the old grey matter, such as finding ways of opening locked doors, and keeping track of infernal teleporters that you have to use otherwise you'll not find secret rooms holding treasures, weapons and armour.

Magic plays a major part in the game but you'll only be able to create a spell once you've found a scroll indicating the runes required to make it up. Do read the manual here. You'll have to spend manna creating a spell and there is a section which has the spells ready for quick casting action which is very useful.

I've played a lot of top-rate roleplaying games on the PC over the last 12 months, and one thing I've got used to and found invaluable is an automapping facility. The Dungeon has no such luxury, so the old pencil and paper is essential. I hope this is resolved in the next offering, no matter where it's from.

At a click of an icon or a press of a key, other essential facilities are there to provide entertaining, long term enjoyment: Saving and loading – four alternative files – sound on/off, decrease/increase volume and so on.

The Dungeon is a really entertaining introduction to roleplaying on the 32-bit machine and the gameplay is superb. It's a pity that the excellent smooth scrolling background graphics are let down by inferior sprites. But it's early days. In theatrical terms: It's a cracking play with a great plot and some superb scenery. Shame about the cast.

Alan McLachlan

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"Repton 4 is challenging, good value for money and well graded. What more can I say?"
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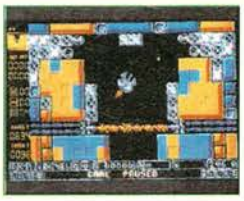

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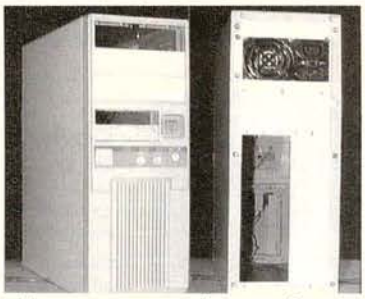

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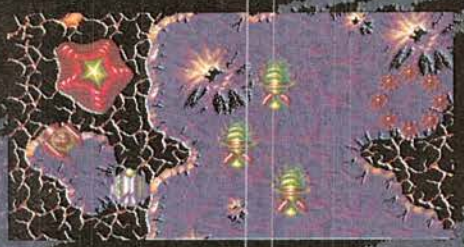

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Play it again Sam 18 ...tee for four

PRODUCT SPOTLIGHT

Price: £19.95 (5.25in disk) or £24.95 (3.5in disk)
Supplier: Superior Software, P.O. Box 6, Brigg, South Humberside DN20 9NH.
Tel: 0652 58585
Requirements: BBC B/Master

● *Nevryon for BBC machines takes some clever coding and the result is brilliant*

WHEN I was a lad, there was a games collection called Play It Again Sam. Well, that seems to be well and truly in the past now, and Superior Software have just beaten away the cobwebs to release number 18.

Unlike most series, the Sams seem to get better as they go along. On this latest offering, you have the pleasures and delights of Holed Out, E-Type, Citadel 2 – the only non-conversion – and Nevryon.

It is always good to play a game without a plot, but then it would be hard to place a golf simulation in a castle, where you must win the US Masters in order to rescue the beautiful princess.

Okay, so **Holed Out** has no castles, no princesses and no bad guys to blast. All that could be left is to tee off. With the full choice of clubs, four skill levels and match or practice options, both Nick Faldo and the casual player should be catered for.

Up to four players can take part and golf can become pretty competitive on the computer. The game is good fun, and unlike many sports sims, it can be taken as seriously or as lightly as you wish.

Racing games are always popular and **E-Type** must be the granddaddy of them all. You drive your slick E-Type Jag around the circuits provided, avoiding rocks, oil and roadworks. The controls do not really help matters, neither do the all too narrow roads.

However, if you thought that just getting around the course is hard enough, you also have to cope with the other cars. For extra time, you can flatten the local bobbies – perhaps they should have updated the game a little and replaced them with members of the Cabinet?

Citadel 2 is a very standard platform, climb-up-a-ladder type game. Very standard it may be, but poor it is not. The graphics aren't excellent but the gameplay is good and there are 150 levels for the enthusiast.

Objects of all descriptions can be found with ladders and ropes for climbing and water and fire for dying in. The game is very varied and if you do get bored, it is unlikely to be due to any sort of repetition in the objects and enemies you meet.

On the 32-bit, **Nevryon** became something of a classic. On the 8-bit, it has to be considered a near-miracle. The graphics are spectacular, the options impressive and the plot isn't relied on too much: The makings of a perfect game.

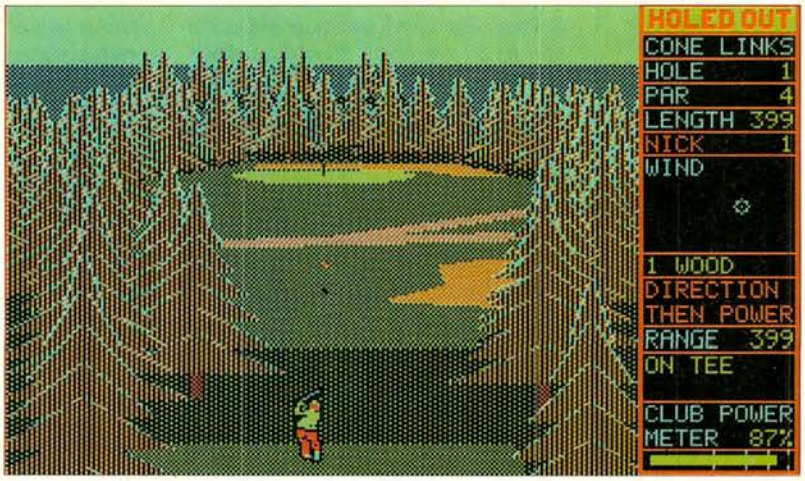
However, nothing is ever perfect, and Nevryon falls down in one small area – it is *hard*. Okay, so that could be a bonus for longevity, but in my opinion, I like a game I can at least get past the first level on my early attempts.

Sam 18 is excellent value for money. The single games alone are worth the price and the four of them together could mean that Christmas has come early.

Paul Mason

● *Enter the Citadel again with this classic arcade adventure*

● *Car racing on the Beeb in a E-type Jag – what else?*



● *Teeing off at the US Masters for fun or for serious golf enthusiasts*

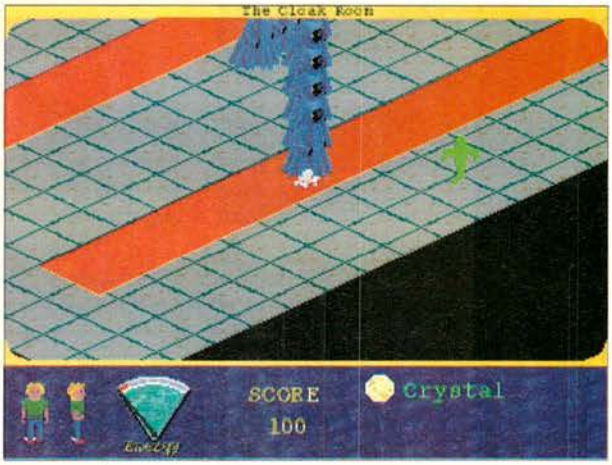
Demon's Lair

...talk of the devil

DEMON's Lair comes on two disks with a simple manual. Disk one contains the game, the standard disk install program and a ReadMe file. Hard disk installation requires the use of Disk one as a key.

Running the software loads it up on to the iconbar and it's from this icon that game options – such as sound – are controlled, plus you can load and save your game state from here.

● *Just looking for somewhere to hang my coat*



Clicking on the icon enters the game proper where you appear at a cosmic doorway – which, if you're in the know, is displaying a demon chaos pattern, subtle eh?

The world you've just entered is dominated by a demon who appears within about 10 seconds of your entry. He follows you around doggedly if a little stupidly – he won't walk through any of the scenery and it's possible to move some barrels around in order to block him in. If the barrels have another purpose I haven't discovered it yet.

In feel this most resembles a 3-D version of the old BBC Micro game Citadel with its multitude of ladders and levels with lots of objects to pick up, carry around and drop elsewhere or use. In fact, the area where you enter is littered with odds and ends: Box of matches, bag, apple, sunglasses and so on.

The display is isometric and the controls are a bit awkward because you have rotate left, rotate right and run forward (you can't just walk). In addition there's step left, right and back, jump and jump-kick, an unusual addition.

Now you *can*, if you're daring, jump-kick the demon and he will crumple to the floor in a heap, but only for about 20 seconds, and any contact you have with him – or any of his cohorts – reduces your available energy.

There are buildings, holes in the ground, a pyramid, water (you can swim and there's a shark) and so on, there's plenty of variety – and a definite *have another go* feel to it.

Demon's Lair is fun (and the spiders are cute) but don't expect too much from the graphics but as the main object sprites are all contained as standard sprite files they could be tarted up a bit. If you like arcade adventures, buy it.

Geoff Brown

PRODUCT SPOTLIGHT

Price: £25.95
Supplier: The Fourth Dimension, 1 Percy Street, Sheffield S3 8AU
Tel: 0742 700661

Quad

...extremely puzzling

DID you sucomb to the USSR's secret weapon? Tetris. The Bourgousie capitalist pigs (us) were all meant to become addicted to it and forget about battling the communists. And it nearly worked.

It's all to do with the blocks, innit guvnor. One game involving blocks did ridiculously well and it spawned a generation of block puzzle games. Quad is another one of those. A fairly clever idea which everybody can play, with a simple mouse-driven control system to go clicking with.

● *By later levels time is against you and the challenge is much trickier*

The graphics aren't bad I suppose, with the picture levels giving a bit of variety. A major plus is that it's pretty cheap and you won't have to sell yourself to procure a copy.

The sound must get a special mention: There are loads of samples some of which are quite funny – albeit of very dubious quality. However, Quad could be likened to East 17, because it's pointless and not particularly good.

The idea is to rotate groups of four blocks which are in a square, which can be done clockwise or anticlockwise. You must arrange the blocks into their coloured columns, by jiggling various sets of blocks – what colour goes where is indicated along the bottom of the screen.

There is a time limit on each level with a clock ticking and you are told to *Hurry up* if you are running out of time and you can't find the combination. And that's it.

Bar a picture game every 10 levels – not that the pictures are much cop – for your money you get 50 levels of sheer unadulterated boredom and a lot of ropey sampling.

Quad could appeal to those who really enjoy puzzle games – or listening to poor sound samples – but there are superior ones around, such as Pipemania, Cataclysm or Lemmings.

Anyway, back to more important matters. Looking at Russia's fiscal policy over the past few years, it has become quite apparent that a huge injection of cash is needed, and furthermore...*it has become quite apparent that a huge injection of cyanide is needed in your case. I liked the game, Ed.*

PRODUCT SPOTLIGHT

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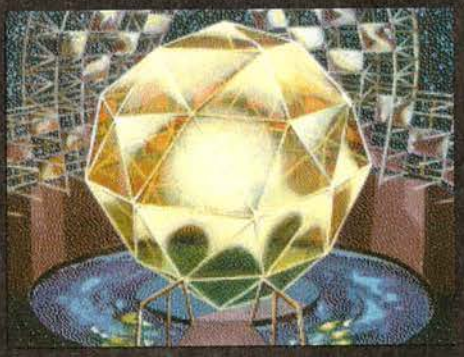
The Crystal Maze

PRODUCT SPOTLIGHT

Product: The Crystal Maze
Price: £39.95
Supplier: Sherston Software, Swan Barton, Sherston, Malmesbury, Wiltshire SN16 0LH
Tel: 0666 840433

● *The first menu screen gives you access to the options and a tantalising glimpse of your goal ...*



...the dome itself

● *You are given control over which keys to use for the point and click and the action games*

● *Set the difficulty level and the direction you want to journey round the zones*

IF graphics alone made a good product some software houses wouldn't have to cross their fingers each time a game was released. But, as we all know, it is that precarious relationship of gameplay, graphics, sound and addiction that makes a winner.

There is no algorithm to assure success and some of the worst turkeys have been conversions from TV shows. So what have Sherston and Digital Jellyfish made of Chatsworth TV's rating-winning series?

Crystal Maze fans can stop holding their breath – it's a winner.

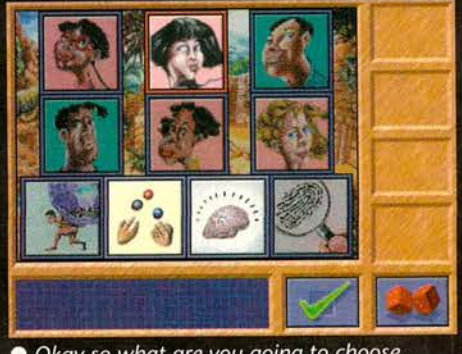
A major problem when it comes to converting a popular show on to a computer screen is to keep the atmosphere and philosophy intact. But the moment *this* one loads, the music evokes an adrenalin rush and the emerging crystal sets the scene.

The main menu screen leads you to the options to enhance or reduce your chances in the maze. Here you select your team – or let the dice do it – choose which way you're going to traverse the zones, set the sound options and decide on the controls. The sound is excellent.

The games fall into two categories, *point and click* – such as mental games and *action* for the physical ones which take on an arcade platform feel. You can opt for keyboard, mouse or joystick and you can specify different devices for the two types.

There are 24 games in total over the four zones: Aztec, Ocean, Medieval and Futuristic. Interestingly the game has been written so that

● *The graphics are superb – choose a team for good looks or take pot luck with the dice*



● *Okay so what are you going to choose, a skill game or a mental one?*

more zones and challenges can be added at a later date just as with the TV show.

How do the games play? Having been guilty of screaming insults and advice at the TV contestants over the years I shamefacedly have to admit that I didn't do too well. They are hard and thank goodness I can practise before I have to embarrass myself in front of others – the TV players haven't got that luxury.

Some of the games are identical to those in the programme but that doesn't mean they are easy to play or that the elusive crystal is any easier to obtain.

The time trickles away. I still want to know why, the minute the music plays, you're surrounded by *experts* giving advice and arguing among themselves – just like the TV. The lucky on-screen players can't hear what the rest of the world is saying to them.

Not all the zones are complete yet but in our very next issue the *Acorn Computing* team will set off into the finished maze. We might even give you some hints on how to get to the dome itself as well as what to do when you get there – but on the other hand ...

Chatsworth made a wise decision when choosing Sherston, as their education software background has put a breath of fresh air into the Acorn games market. The Crystal Maze is a must for everyone from lovers of mind-bending puzzles to joystick-frenzy enthusiasts.

● *The* ***I cracked the Crystal Maze*** *crystal used on the cover was won by Kate Billington from Cheadle Hulme during the 1992 series.*

NEXT MONTH

You can be one of the first to play the Crystal Maze if you buy the November issue of *Acorn Computing*. For the Megadisk, exclusively, Sherston have put together the Aztec zone with a selection of some of the games for you to tackle.

Make sure you get a copy by reserving it at your newsagent or taking out a subscription.

● *Perhaps we'll have better luck in the next zone*

● *Opting for skill was obviously a good choice – that's at least one crystal*

● *This time we'll go for mental, any ideas ...?*

● *Oops, this time the skill game is a little more tricky*

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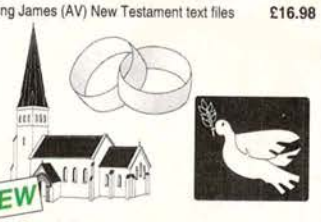

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"Can be used by anybody who can click a mouse button" - September 1992 Archive Magazine

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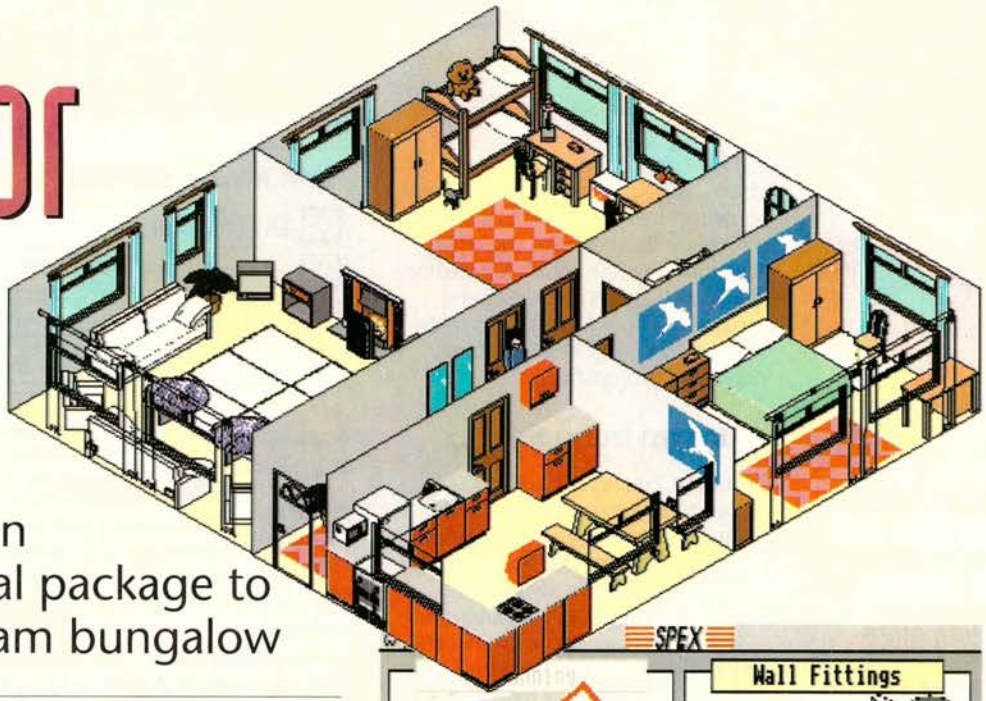


Steve Bruntlett uses an innovative educational package to plan and cost his dream bungalow

SPEX is described by ExpLAN as a package which enables pupils of all ages to design their own environments. As such it involves no drawing but rather places ready-drawn objects such as baths, tables and windows into rooms of a chosen size.

The initial package concentrates on four rooms: Kitchen, bathroom, bedroom and lounge. Further rooms and environments are promised in the near future.

Spex is not an interior design program but aims to develop spacial awareness in all ages. It comes with comprehensive A4 booklets of well printed and reproducible worksheets for work in different Key Stages and a kitchen project booklet plus a disk of clip art.

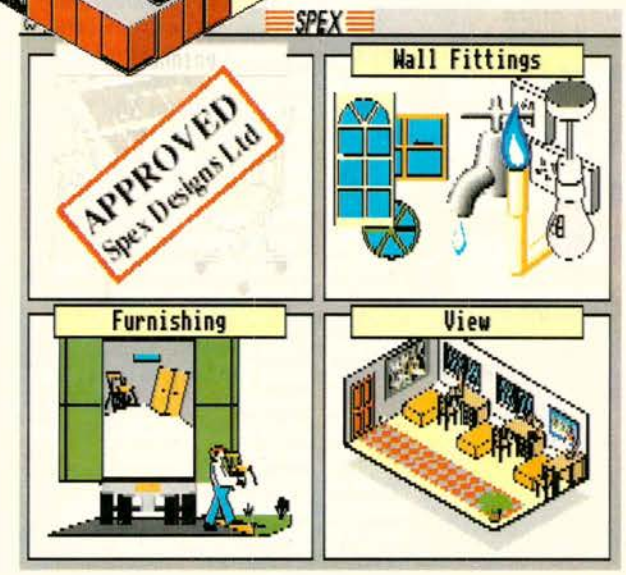
With this clip art you could produce a catalogue of furniture with costs, sizes and suggested layouts, provide room sizes for a house and furnish it within a price range. This would work well as a cross-curricular or Design Technology project and could be undertaken on different levels of difficulty using the spreadsheet option for costings and the bar and frequency graphs to show the breakdown of furniture items.

Individual drawings of the rooms can be exported to Draw and with a bit of treatment can be assembled to form buildings. This opens up opportunities to combine rooms with other art or design packages to produce a whole range of worthwhile and interesting projects for secondary school pupils.

Some of the concepts that the program seeks to develop are scale, measurement and units, the link between plans and the real world, different methods of presenting information, ergonomic design for certain room types, safe and dangerous room layout, creative arrangement of items, hierarchy and grouping.

PRODUCT SPOTLIGHT

Product: Spex
Price: £69 (Primary) £99 (Secondary)
Supplier: ExpLAN, Freepost, Tavistock PL19 9BR
Tel: 0822 613868



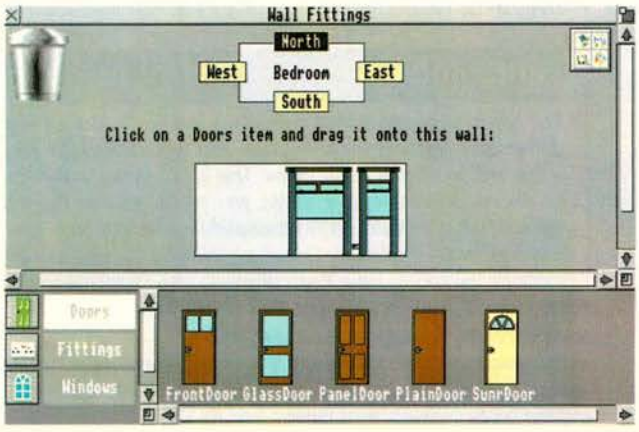
● *Your design has been approved by the planning department*

Bricks and mortar

To produce a room you decide what size the layout should be, entering sizes in metric or imperial measurements for depth and width. The computer standardises on a normal ceiling height. Once the room shape has been produced using the Planning section you are awarded an *approved* sticker.

The doors, windows and wall features are placed on wall elevations using the Wall Fittings section after selecting from N, S, E or W. The room items – which can be from any room using an Item Search option – are placed using the plan view in the Furnishing section and the whole room viewed in isometric projection using the View section.

All of these views can be printed ➤



● *Enter the Wall Fitting Department to find what works best*

out for reference as well as bar charts, pictograms and spreadsheets showing the use and cost of units which are illustrated in the clear and concise A5 manual. A drawing of isometric graph paper can be printed out should you wish to do some preliminary work in that particular projection.

A dream bungalow

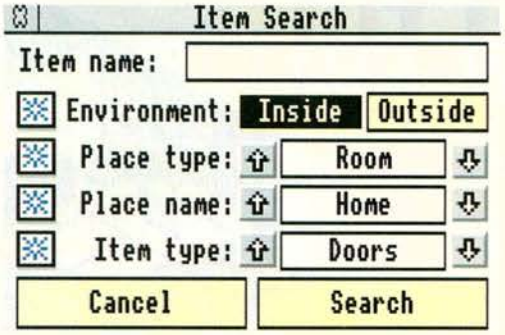
I thought I'd try and put Spex through its paces by constructing an isometric plan view of a bungalow. The best place to start is with some planning and some idea of the number and size of rooms required.

I'm using three rooms across the front of the front of the bungalow – living room, entrance hall and kitchen facing front right and the adjacent side of the kitchen and a bedroom facing side right. I later decided to have three rooms across the back of the bungalow – two bedrooms and a bathroom.

I'll try not to draw much on the front walls so that they don't obscure the rest of the drawing but I will put in the windows and doors. The reason for the bungalow is that Spex has no staircase feature as it is only intended to be a room designer – though with the promised supplementary disks this may change. At the moment assembly into a bungalow is done in Draw.

The first stage is to produce a number of rooms to a consistent size or at least to a consistent depth, as the width of the rooms such as the entrance hall, kitchen and living room, will be different. As this doesn't make much sense in terms of planning a bungalow I added an entrance hall deeper than the rooms either side with doors through to the back bedrooms and the bathroom.

> ...but it does serve its purpose well in allowing even quite young children the opportunity to get involved in costing a real project



● *Spex's cross-room item searching facility*

This seems to work well in terms of providing access to different parts of the house. I could have added a kitchen door and fiddled about with the accurate placing of doors but the illustration serves its purpose well enough.

I must emphasise that the final drawing of the bungalow took a few hours to produce, involving the construction of six different rooms using Spex and their importation into Draw for final assembly once they had been reduced to half size – a single room will take minutes.

Using the spreadsheet I calculated that the hall cost £463.70, the bathroom £429.30, the first bedroom £2,363.80, the second £1,023.93, the kitchen £2,904.50, and the lounge £3,474.70.

This is not realistic in terms of furnishing a bungalow – the doors and windows are normally included in the cost – but it does serve its purpose well in allowing even quite young children the opportinuty to get involved in costing a real project.

Spex is helpful, automatically putting windows, curtain rails and electric sockets at the correct heights or reminding you to place objects such as cupboards against the wall.

The few inconsistencies I put down to memory restrictions. For instance, the bath can only be put in two places while with the anglepoise lamp you have eight possible orientations to choose from and most other objects can be placed in four positions.

Generally this isn't a problem but I couldn't get the right orientation to have the sink facing into the room under an outside window which is standard practice in kitchen planning.

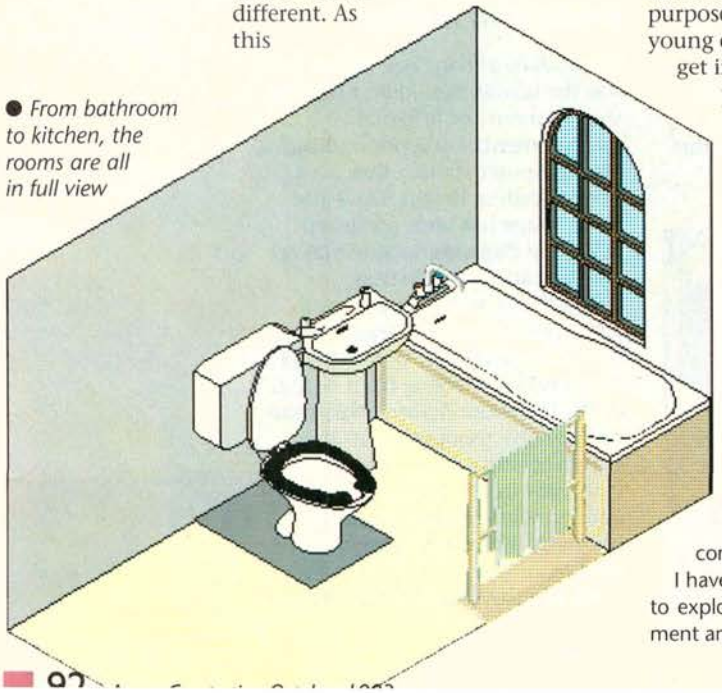
This doesn't affect what has to be a superb way of working with objects which are rotated and placed in the Furnishing Department, moved around or dumped if not quite right, checked in isometric projection in the View Department to see if they are in the right place and moved again back in the Furnishing Department.

If the windows and doors aren't right you can move back into the Wall Fittings section, move them a bit and go back into the Furnishing Department to move, say, the chest of drawers that was blocking a doorway five seconds ago.

I first felt it would be easier to alter the doors and windows in a plan rather than in an elevation view. But the design works and it's also a more realistic way of working.

I did have difficulty in deciding which of the isometric faces represented north, south, east and west – top left, top right, bottom left and bottom right.

A directional arrow would have helped especially when working on the west and north walls – top left and top right isometric faces. If you don't get used to using these faces you may find most details obscured by the east and south walls.



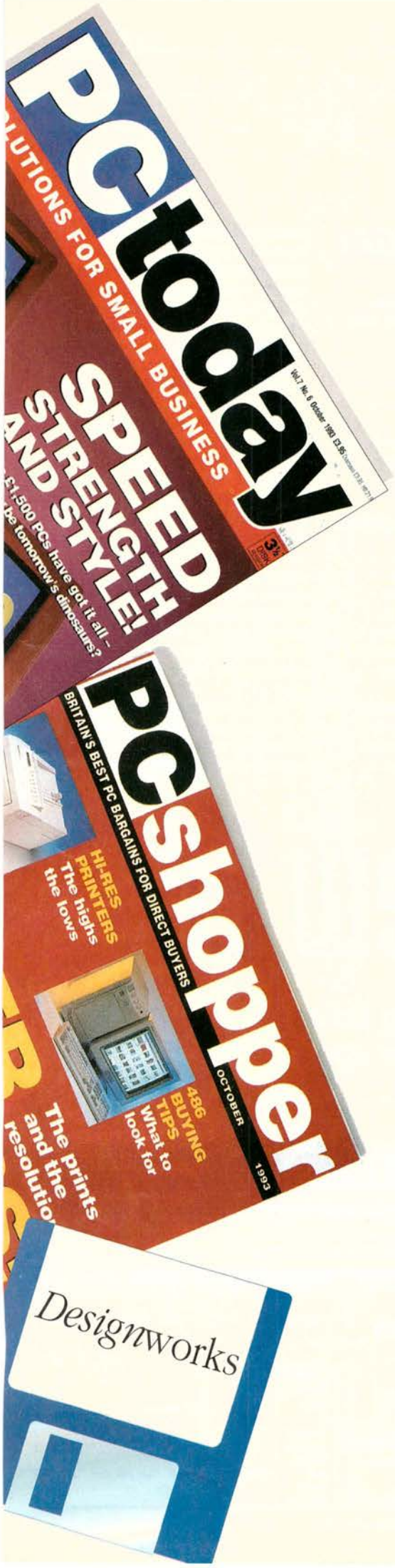
● *From bathroom to kitchen, the rooms are all in full view*

Summing up

The whole program is well conceived and works like a dream. I had a wonderful time creating the bungalow and would now like to work on a landscape and roof for it using Draw. This is not to say that the program doesn't go far enough in what it allows you to do, merely that once I'd explored some of what it could do I immediately wanted to push beyond the limits of the program.

Once the rooms have been dropped into Draw the individual objects can be moved around drawings and from drawing to drawing, re-coloured, combined with painted images and so on.

I have no hesitation in recommending Spex to any school or home user who wants to explore a fascinating world and I'm looking forward to the forthcoming environment and the room development packs.



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Meet the new Ed

Ian Kershaw takes a tour of Strong Ed as it emerges from its shareware *alter ego*

AS text editors go, !Edit – now built into Risc OS 3's roms – must be one of the least inspiring. It has many useful features, but the lack of decent wordwrap and scrolling makes it really quite unappealing for all but the simplest tasks. Enter StrongEd.

It isn't new. Earlier shareware versions have been available for some time, but with few people registering, the program has gone commercial. The latest version includes many enhancements and bug fixes as well as a comprehensive manual.

StrongEd is loaded with useful features and the attention to detail is obvious. The scrolling is beautifully smooth and fast and you can even reach those bottom few lines with the scroll bar while the wordwrap automatically justifies text to any width, even after it has been entered.

Programmers will appreciate StrongEd as it uses less than 200k, making program development on the desktop all the more feasible.

PRODUCT SPOTLIGHT

Product: StrongEd
Price: £24
Supplier: Stallion Software, Arundel House, Arundel Road, Camden, Bath, Avon BA1 5JX.
Tel: 0225 339090
Requirements: Risc OS 3.1

There is also an impressive array of languages supported including Basic, C and Pascal.

Putting it through its paces

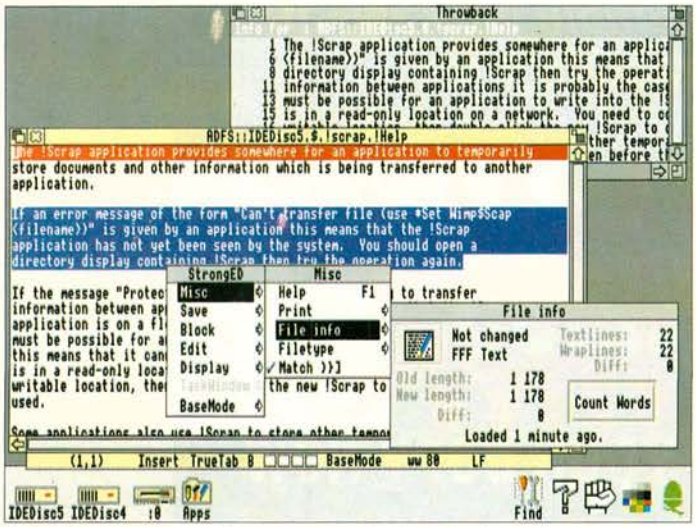
A StrongEd view gives you a window, with one noticeable difference – an info bar at the bottom. Useful information is displayed such as caret position – in x,y form or as an offset – plus the current mode, wrapwidth and markers.

One innovative feature I found particularly useful is the copy key function. This works in the same way with the cursor keys as at a command line allowing you to reproduce sections of text. The interactive search, too, is a superb facility with the next match of a string found instantly. Cycling the up and down arrows will find the previous or subsequent occurrences.

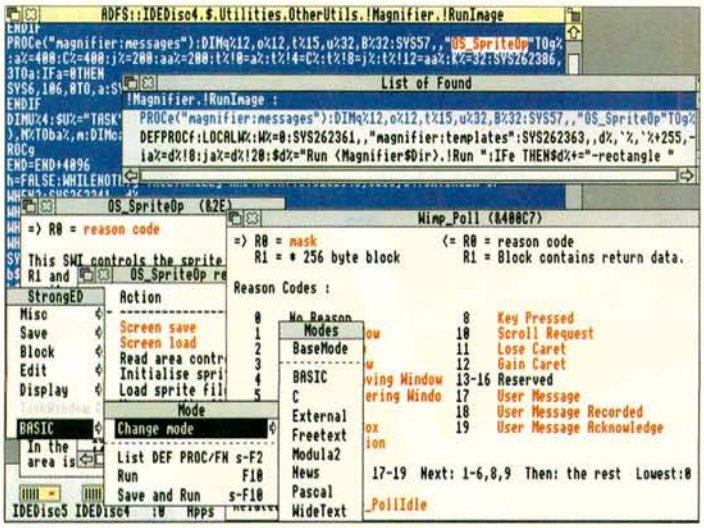
Another nice feature is the viewer system which works in a similar way to the Desktop save. Running a viewer loads in all the files in the right places, just as you left them – great if you have to stop in the middle of something.

Block editing is comprehensive as you select an area of text in much the same way as with a wordprocessor. Clicking Adjust above or below the block extends it as you would expect – not from the cursor position like some other editors. Once an area is selected, you can not only save, copy, delete and move it, but also change its case.

You can even indent the block by a specified number of spaces, negatively as well – so you can remove indents. I also found that



● *For C programmers there are multiple throwback windows*



● *Help with Basic programming*

you can indent the block with text such as a REM in Basic files which stops certain lines being run, although this feature does not appear to be documented anywhere.

Crossing the t's

The edit menu is just brimming with options including the undo and redo. It also includes comprehensive search functions. The first is the interactive search, and search and replace allows any string to be found, within the current block, text or throughout all loaded files. A count string facility is also included.

Finally, *list of found* is similar to a normal search function, but instead it brings up a window listing all matches with the line on which it was found – particularly useful for programmers searching through variables.

Unfortunately, the window does not tell you which string has been searched for, so with a few *list of found* windows up, you could get a bit confused. A full search history is stored and you can recall any previous search string with Shift+Up arrow.

From this menu you can go to specific lines or to a selected block. Changing linefeed endings on textfiles and spoolfiles used to be a chore, but one operation in StrongEd quickly changes them all. This is a godsend for anyone who frequently converts textfiles between Acorn and PC computers.

You can also unwrap lines which essentially adds a linefeed to the end of every line which is suitable for making text files which need to be set to a specific width.

Built into StrongEd is a help program called StrongHelp. This useful hyper-text-style application provides help on a variety of programming topics. As the two applications interact, pressing F1 in StrongEd brings up information on the adjacent word making it simple to look up calls while programming.

Although for most references StrongHelp is sufficient, the addition of page numbers for the Programmer's Reference Manual could be useful. Thorough interactive help is provided throughout StrongEd even on menu items, and StrongHelp can be used to view this too.

Bells and whistles

The StrongEd display is fully configurable, both in colour and in the way Tabs and control codes are displayed. The wrap width can be set to any value, or even be automatic which justifies the text to the current width of the window. Multiple views can be set up on a single text file and task windows, too, are fully supported even with Control+F12.

For C programmers, multiple throwback windows can be displayed at once and Shift+click on a line deletes it. StrongEd does not deselect the block when you click on a throwback line, rather highlighting it in red. However, in all languages, there is the ability to list functions and procedures and making, compiling and running from StrongEd is easy.

The Escape key closes menus and deselects text, but also acts as a pivot point for selecting new text with the cursor keys making keyboard-only editing viable. You no longer have to reach for the mouse to close a text file. Control+Q takes care of that.

Indeed most, if not all, operations have a keyboard shortcut. It is just a pity there isn't a reference card or function key strip, although the keys are covered thoroughly in the well written manual.

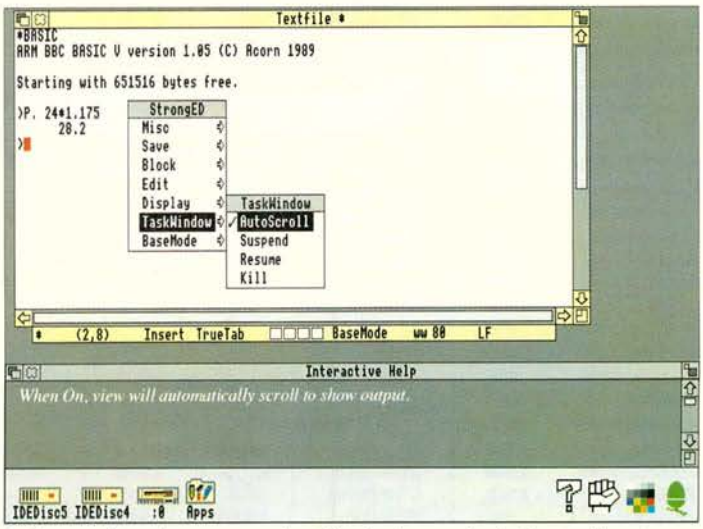
Keypresses can be recorded and played back making repetitive operations easier. There are many switches, or configurable options, which allow everything from suppressing beeps to hiding the pointer when you type.

One of my favourite features is the facility to press F7 in *any* application to insert the selected block at the caret. If the application used traps F7, it is no trouble to edit the keyboard layout files within StrongEd to remedy this.

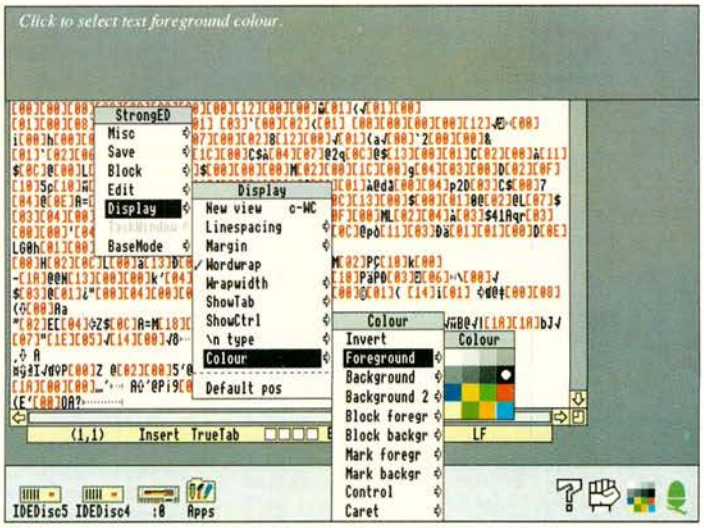
Summing up

StrongEd has so many functions, I am surprised it doesn't make coffee and do the ironing as well. There are some additions I'd like to see in version 3 such as a programmer's calculator like that of DeskEdit 2 as well as a powerful search and replace facility.

The bottom line is that StrongEd is a powerful, professional text editor that picks you up from where Edit leaves you.



● *The scrollong is very smooth while the interactive help stands out*



● *Despite the many built-in features StrongEd retains its flexibility*

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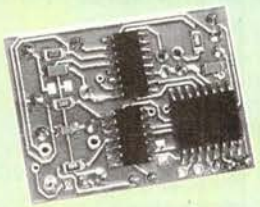

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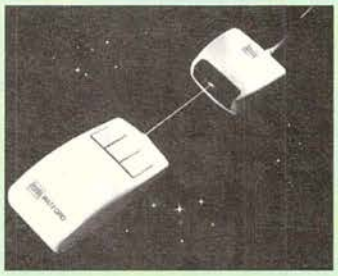

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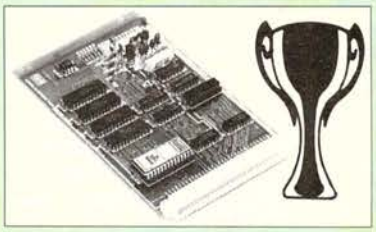

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Here it is at last – the all new Mark 2 version of Watford's highly acclaimed ARM 3 processor board for the Archimedes and now also the A3000 series computers. Using the latest surface mount technology on a high quality four layer circuit board we have reduced the overall size to a mere 53mm x 45mm, and the cost to only £145. Mk II upgrade will increase the speed of your micro by a factor of 3 to 6.
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KEY:

(Gr)aphics	(Sp)readsheet
(Ga)me	(Da)tabase
(Ed)ucational	(In)tegrated
(Mi)scellaneous	Package
(Wo)rdprocessor	(La)nguage

HOW TO ORDER

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Watford's Mk II hand scanner has a maximum resolution of 400 dpi. The scanning width is 4". The sophisticated software is supplied in a 64K ROM, located on a standard single width expansion podule. As you scan a page, the image appears in the scanning window on the screen, scrolling up in real time. Other facilities include Cropping and scaling to any size including stretching and squashing in X and Y directions separately. Colour tinting. X and Y flip. Edge detection which turns solid objects into outlines. Images can be printed on any printer supported by RISC OS.
On-screen help is provided via the RiscOS interactive help facility. (Please write in for full technical details).

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An attractively finished, extremely reliable, mouse replacement, input device. Requires very little desk space. Connects directly to your BBC B, BBC Master or Archimedes Micro.

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* Not lockable

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When using ones micro, there is a tendency to have more than one Disc on the desk. This exposes them to the hazards of fingerprints, scratches, dust, coffee and an untidy desk.

Why not protect your valuable data from all these hazards with the help of our extremely handy and low cost DISC PLONKER RACK. Holds up to eight 5.25" discs.

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Lifetime warranty on 3M Discs

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Top Quality Diskettes

Watford's life time guaranteed disc are supplied complete with self stick labels & plastic library case.

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(Lifetime warranty on Discs)

BULK PACK DISCS in lots of 100

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• 3.5" D/S D/D	£21 for 50	£39 for 100	
• 3.5" D/S H/D	£40 for 50	£75 for 100	

Disc Drive Power Leads

Supply from BBC power supply to standard Disc Drive Connection: Single **£3.00**; Dual **£3.75**

Disc Drive Interface Leads

BBC to Disc Drives Ribbon Cable
Single **£4** Twin **£6**

3.5" Disc Drives

These top quality 3.5" Double sided, 80 track, are at-tractively finished in BBC beige. They are supplied complete with all cables and a Utilities Disc.

Type	Description	
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• **CLS35:**	Single Disc Drive, 400K	**£59**
• **CLD35:**	Twin Disc Drives, 800K	**£109**
	Disc Drive with PSU	
• **CS35:**	Single Disc Drive, 400K	**£82**
• **CD35:**	Twin Disc Drives, 800K	**£126**

(P.S. CS35 is supplied in a twin case with a blanking plate to enable easy expansion to a dual drive at a later stage)

Disc Drives in Monitor Stand

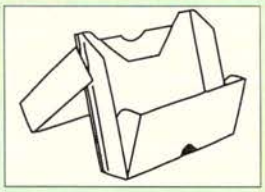
• **CDPM 800S** – Twin 5.25", 800K Double sided 40-80 track switchable disc drives mounted in an attractively finished Beige colour plinth for the BBC B & Master 128K micros. Supplied complete with integral power supply, cables and Utilities disc. The mains switch with neon On/Off light indicator, and the two 40/80 track switches are mounted on the front panel for ease of use.

£139

• **DP35 800** – Same as above except, one disc drive is a 5.25" and the other is 3.5".

£135

Plastic Library Cases



DLC1 – Holds 5 x 3.5" Discs. **£1.50**
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DW3 – Holds 20 x 5.25" Discs **£3.50**
DW4 – Holds 40 x 3.5" Discs or 5.25" Discs **£4.50**

Cleaning Kits & Aerosols

- 5.25" Disc Cleaning Kit **£4**
- 3.5" Disc Cleaning Kit **£4**
- PC Cleaning Kit **£7**
- Professional PC Cleaning Kit **£12**
- Aerosol Dust Spray Can **£3**
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Watford's MkII 1772

Single/Double Density DFS

Many of our customers have wanted to use our superior DDFS and Acorn ADFS together. Now our Mk II DDFS Board with its 1772 Disc Controller, has been adapted to allow the use of Acorn ADFS as well. It also has all the commands of the Acorn's 1772 DFS, plus many more added features.

- Complete Kit Special Price **£39**
- DDFS Manual (No VAT) **£6.95**

Assorted ROMS BBC B/Master

ACORN ADFS	£25
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Acorn OS 1.2	£14
Beebmon	£22
Dump Out 3	£25
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GXR-B	£21
GXR-B+	£22
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MASTER OS ROM	£38
Master ULA (47)	£15
Master ULA (60)	£10
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Numerator – BBC	£39
Pendown ROM	£32
SERIAL ULA	£13
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# Price includes a FREE Wordaid Rom	
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Quality Disc Drives from Watford

All our Disc Drives are Double Sided and will operate in both Single and Double Density modes. All 5.25" Disc Drives are 40/80 track switchable. For ease of use, the switches are front mounted.
Follow the trend with a Watford plinth. (Turn to the 6th page of our advert for the Plinths).
P.S. All our 5.25" Disc Drives with PSU are compatible with the Compact Micro. All you require is our special Compact Disc Drive cables designed by us.

"Test Bureau Approved for Use in Education"

Our Disc Drives conform to BS415

Type	Description	
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• **CLD800S:**	Twin, 40/80 track, 800K Double sided Drives	**£138**
	Disc Drive with PSU	
• **CS400S:**	Single, 40/80 track, 400K Double sided Drive	**£85**
• **CD800S:**	Twin, 40/80 track, 800K Double sided Drives	**£149**

Acorn & Watford DFSs

- Watford DFS Kit complete **£42.00**
- DFS Manual (comprehensive) **£6.95**
- Acorn DNFS ROM **£17.00**
- Acorn ADFS ROM only **£25.00**
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Acorn Speech Synthesizer package complete, for the BBC B Microcomputer
Special Offer £6

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- **CubScan 1450** – 15" FST £POA
- Dust Cover for Microvitecs £5.50
- **Touchtec 501 Touch Screen** £239
- **Touchtec 3000** (For RiscOs 2 only) £POA

3 years parts & labour warranty

Multiscan Monitors

Eizo T240i	£483	Pan TX1713MAB	£616
Eizo F340i-W	£625	Phil 4CM4270	£289
Eizo F550i-W	£899	Phil 7CM3279	£249
NEC 2A-N	£274	Phil 7CM5279	£269
NEC 3FG	£360	Taxan 787	£229
NEC 3FGe	£449	Taxan 787LR	£239
NEC 4FGe	£479	Taxan 789LR	£289
NEC 5FG	£899	Taxan 795-PC	£465
NEC 5FGe	£789	Taxan 875+ LR	£737
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Panasonic monitors carry 2 years on-site maintenance warranty

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Its multiscan circuitry provides automatic adjustment for frequencies between 31 and 56KHz horizontal, and 43 and 70Hz vertical. Its 0.28mm dot pitch high resolution tube provides super sharp text graphics, while a high speed (70/72Hz) refresh rate provides a flicker-free display easing the eye strain. The VIDC Adaptor supplied with the monitor allows high resolution operation in all screen modes. **£299**

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- Aries 6000 – 15" Flat Screen, 0.28mm non-glare 1024 x 768 non-interlaced (70Hz) Microprocessor controlled £395
- Aries 7000 – 17" Flat Screen, 0.28mm non-glare. Maximum resolution 1280 x 1024 non-interlaced. Microprocessor controlled £625

Philips Monitors

- **BM7502** 12" Hi-res Green £88
- **CM8833ii** 14" med. Res Colour. Ideal for BBC B; Master & Archimedes £192
- Dust Cover for Philips Monitors £6
- Spare Monitor Leads (various) £7

Pace External Modems

All Pace modems are BABT Approved and include a 5-Year Parts & Labour Warranty

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Linnet 24 – Intelligent, V21/V23, V22, V22bis, Auto Dial/Answer, Hayes Compatible £142

Linnet Quad – Intelligent, V21/23, V22, V22bis, V42, MNP 4&5, Auto, Dial/Answer, Hayes Compatible £175

Linnet 32 – V32, V22bis, V42bis, V42, MNP 4&5 £249

Linnet 32+ – V32bis, V32, V22bis, V22, V23, V21, V42bis, V42, MNP 4&5 £299

Ultralink Quad – V22bis, V22, V21, V23, V42bis, V42, MNP 4&5, Upgradable to Ultralink 32 Plus Spec. £199

Ultralink 32+ – Intelligent, V32bis, V32, V22bis, V22, V21, V23, V42, MNP 4&5, 2&4 wire leased line with P.S.T.N., dial backup and auto restore £429

Archimedes Comm Software

- Hearsay £69
- Arc Comm £45
- RS-232 Cable for above modems £9

Printer Leads

- BBC Centronics 4' £5; 6' £6
- Archi Parallel 2m £5; 5m £9; 10m £13
- PC Parallel 2m £5; 5m £9; 10m £13
- 25 pin D Male/Male 2m £5; 5m £10
- Centronics Double Ended 4' £5; 6' £6; 5m £10; 10m £14
- RS232 Leads Various £POA

Integrex Ink Jet Printers

- Paper Roll for Integrex 132 £6.50
- BBC Screen Dump Software £10
- Colour Cartridge £23
- Black Cartridge £14
- 100 A4 OHP transparencies £55
- Colour Jet 2000 £599
- Betajet Ink Jet Printer £185
- Betajet Cut Sheet Feeder £43
- Integrex Colourjet Series 2 £335
- Auto Sheet Feeder for Series 2 £45

Star Printers

	Printer	CSF	Ribbon
LC15	£186	£135	£5
LC20	£102	£60	£4
LC100C	£117	£65	£9
LC24-15	£242	£135	£5
LC24-100	£142	£69	£5
LC24-20 Mk2	£170	£65	£5
LC24-200C	£205	£65	£12
LC200 C	£151	£65	£12
Star Jet SJ48	£169	£43	£16
SJ144C	£399	–	–
XB24-200C	£322#	£80	£12
XB24-250C	£389#	£139	£12
ZA-200C	£258#	£89	£12
ZA-250C	£324#	£139	£12

Includes 12 months on-site warranty

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- Serial 8K I'face LC10/15/24/200 £52
- 32K Buffer LC/XB24-10; 15; 200 £52
- Star/Archi Colour Printer Driver £15

NEC Printers

	Printer	CSF	Ribbon
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P32	£255	£59	£6
P62	£339	£79	£8
P72	£395	£115	£8
P90	£577	£115	£8

- Jetmate J400 £169; • Jetmate J800 £249

- Black Ribbons P20; P32 £6
- Ribbons P60/70/P90 Black £8; Colr £14
- P60/70 Colour Option Kit £59
- CSF for P20 £59; P60 £89; P70 £89

Panasonic Printers

	Printer	CSF	Ribbon
KX-P1123	£129	£49	£7
KX-P1170	£98	£59	£6
KX-P1624	£267	£126	£8
KX-P1654	£334#	£126	£8
KX-P1695	£270	£126	£6
KX-P2123M	£148	£69	£7
KX-P2124	£220	£89	£7
KX-P2180M	£128	£69	£7
KX-P2624	£272#	£126	£8
KX-P2023	£158	£155	£8

FREE – Printer lead with every Panasonic printer listed above

Includes 12 months on-site warranty

- Dustcover for 80 column printers £6
- Serial Interface for above Printers £46
- Black Ribbons for P1081, 1180, 1124 £7
- Brown, Blue or Red Ribbons for KX-P1081/1592/1595/1695 £9 each
- 32K Buffer for above Printers £16

Colour Kit for KX-P2180; KX-P2123 and KX-P2124 £37

Laser Printers

All Laser printers (excluding HP Lasers) include 12 Months On-Site maintenance

Brother HL4-PS Postscript	4ppm	£965
Brother HL6 – NEW –	6ppm	£427
Brother HL10-PS	10ppm	£1265
Brother HL10-DV	10ppm	£1016
Brother HL10-DPS	10ppm	£1435
Canon LBP4 LITE	4ppm	£478
Canon LBP4+ 1.5M RAM	4ppm	£639
Canon LBP-8 Plus IIIR	8ppm	£1420
Canon LBP-8 IV 600DPI	8ppm	£932
Epson EPL-4300	4ppm	£520
Epson EPL-5000	6ppm	£439
Epson EPL-5200 – NEW –	6ppm	£525
Epson EPL-7500 PS	6ppm	£1135
HP Laserjet 4 ML	4ppm	£757
HP Laserjet 4	8ppm	£1049
HP Laserjet 4L – NEW –	4ppm	£459
HP Laserjet 4M PS	8ppm	£1369
HP Laserjet 4si	16ppm	£2199
HP Laserjet 4Si MX 1200 DPI	16ppm	£3325
NEC Silentwriter S62P PS#	6ppm	£990
NEC Silentwriter S102	6ppm	£893
NEC Silentwriter2 290	8ppm	£1125
NEC Silentwriter 290P PS	8ppm	£1449
OKI OL400E	4ppm	£419
OKI OL410		£589
Panasonic KX-P4410	5ppm*	£445
Panasonic KX-P4430	5ppm*	£579
Panasonic KX-P4451 DB	11ppm*	£839
Panasonic KX-P4455 PS	11ppm*	£1249
Star LP-4 Post Script	4ppm	£759
Star LS-5	5ppm	£473
Star LS-5 EX (RISC Based)	5ppm	£595
Star LS-5 TT True Type+Mac	5ppm	£739
Star LP-8 III postscript	8ppm	£1125

*2 years on-site warranty

FREE Logitech Scanman 32 scanner & Microsoft Publisher

- HP Laserjet 4L 3 years on-site £100
- HP Laserjet 4si 3 years on-site £505
- HP Laserjet 4/4M 3 years on-site £170

Laser Toners

Canon 2, 3 & 4	£52	KXP4450/50i/55	£20
Canon LBP8-IV	£75	KX-P4420/30	£30
Canon 8/Star LP8	£59	NEC SWriter	£84
Epson GQ	£12	HPII/D, III/D	£60
EPL 40/41/4300	£55	HP IIP, IIIP	£54
EPL 71/7500	£117	HP4/4M	£72
EPL 8100	£117	HP Laserjet 4L	£59
Qume Crystal(3)	£84	OKI OL400/800	£21
Star LP4	£52	OKI OL400e	£17
Star LS5	£69	VM800 8K pages	£99

Laser RAM Upgrades

Type	1M	2M	4M	
IIP; IIIP	£49	£80	£132	
II & IID	£60	£96	£142	
LJ4/4M	£69	£75	£175	8M/£279
EPL4100	–	£120	–	512K/£52
KX4420/50i	£59	£89	£149	
NEC S62/S102	£99	£180	–	
Star LBP	£139	£275	–	
Laserjet 4L	£75	–	–	

Jetpage Postscript Cartridge

- HP IIP/IIIP £225 • IID & III £227

Various Add-Ons

- Laserjet Appletalk Interface £135
- HP Adobe Postscript+ Cartridge £359
- Pacific Page Postscript £259
- HP Premier Font Collection £28
- Laserjet Various Font C'tridges from £45
- HP Postscript Module for LJ4 £270
- Laserjet 4 Powered envelope feeder £199
- Jetdirect Ethernet Card for Laserjet IIIsi/4/4Si £359
- 500 Sheet paper cassette (3rd Bin) £205
- HPIIP/IIIP Lower Cassette Tray £115
- Canon LBP-4 Lower Cassette Tray £96
- Ozone Filter P4420 £9; P4450/55 £20

Hands-On Open Day

We are proud to announce the date of our forthcoming Hands-on Open Day on Sunday, 3rd October, 1993, to be held at our High Tech HQ in Luton. This is the latest in a successful series of Open Days held by Watford, attended by over 2,000 people.
Also, on Saturday 2nd, the day before the big Open Day, Watford will be holding a series of presentations on the Acorn Headstart scheme aimed at students interested in purchasing an Acorn machine.

For further information, contact Richard Overfield or Keith Archer on:

0582 48 77 77

Citizen Printers

120D+	£94	Swift 200	£178
PN-48	£179	Swift 240	£200
Swift 90	£132	Swift 240C	£212
Swift 90C	£198		

2 years parts and labour warranty on all above Citizen Printers.

- Swift 24 Ribbons: Black £4 Colour £13
- Cut Sheet Feeder for 80 col. printers £75
- Citizen 120D Ribbons £3.50
- Archi Colour Printer Driver £15

Hewlett-Packard Printers

DJ500 colour	£242	Desk Jet 1200C	£1045
Desk Jet 510	£199	DeskJet 1200C PS	£1452
DJ 550 Colour	£399	Deskwriter 550C	£459
DJ Portable	£175	PaintJet XL300+	£1675
Deskwriter	£299	PaintJet XL300PS	£2619
Deskwriter 500C	£349		
Quiet Jet plus	£299		

+ Includes 12 months on-site warranty
3 years on-site maintenance available as follows:

DeskJet & DeskWriter mono	£55
DeskJet & DeskWriter colour	£65

*Paintjet Cartridge Black £17; Colour £27

- DJ Portable CSF £49; Carrying Case £49

Special Offer

When you purchase any Hewlett Packard printer from us, you qualify for the following software offers:

- Adobe Type Manager v2 £45
- Designworks Software pack at £39
- Lotus Organiser Software at £39

Hi-quality InkJet Paper
A4 90gsm 500 sheets £9

Desk Jet 500 Accessories

- Ink Cartridges Black £16; Colour £23
- High Capacity Ink Cartridges Black £25
- **Ink Refill Double Pack (JetFill)** £10
- **Ink Refill High Capacity (JetFill)** £16
- **Deskjet Turbo Driver** £45
  (only £39 when purchased with printer)
- Archi – DJ550 Colour Printer Driver £14
- Epson FX Emulation Cart.(500 mono) £45
- IBM Proprinter Emulation Cartridge £59
- Wordperfect Cartridge £89
- DJ 500 Dust Covers £6
- 636G 50 x Transparencies A4 £40
- 636J 50 x Glossy Paper A4 (also XL) £40
- 630Z 50 x Cut Sheet Paper A4 £15

Plug In Font Cartridges for DJ 500

22706B - Prestige, Elite, Line Draw	£55
22706C - Letter Gothic & HP Line Draw	£56
22707P - Proprint Emulation Cartridges	£57

HP Paintjet/XL Accessories

- 630P 200 Z-Fold paper 8.5 x 11 £14
- 630Q 50 Transparencies 8.5 x 11 £39
- 630S 50 Transparencies A4 £40
- 630Y 200 Cut Sheets 8.5 x 11 £14
- 631Y 200 Cut Sheets A4 £18

Epson Printers

	Printer	CSF	Ribbon
FX870	£265	£47	£4
FX1170	£335	£69	£6
LQ100	£132	£–	£4
LQ500	£204	£–	£–
LQ570+	£201	£39	£4
LQ870	£355	£39	£6
LQ1060	£585	£155	£6
LQ1070	£310	£69	£6
LQ1170	£434	£69	£6
LQ2550	£669	£360	£6
LX100	£114	£–	£4
LX400	£92	£69	£4
LX850+	£134	£69	£4
LX1050	£203	£125	£6
SQ870	£419	£170	£23
SQ1170	£555	£155	£23
SQ2550	£669	£–	£23
Stylus 800	£219	£–	£10

Epson RS232 Interface

Standard **£28;** +8K Buffer **£75**

- LQ100 Tractor Feed **£29**
- FX850/LQ800/850 Tractor Feed **£69**
- FX/LQ1050 Tractor Feed **£85**
- LQ2500/2550 Tractor Feed **£90**
- Dustcovers for 80 col printers **£6**
- Stylus 800 Transparencies (50) **£35**

Canon Bubblejet Printers

	Printer	CSF	2nd Bin	Ink Cart
BJ10SX	£165	£43	–	£16
BJ200	£244	–	–	£16
BJ230	£280	–	–	£16
BJ300*	£305	£88	£88	£12
BJ330*	£369	£92	£79	£12
BJC800C	£1219	–	–	£16

- **BJ10E/10EX/10SX/200/230 Jumbo Ink Refill pack (Jetfill Twin Pack) £12**
- Optional Battery pack for BJ10EX/SX **£33**

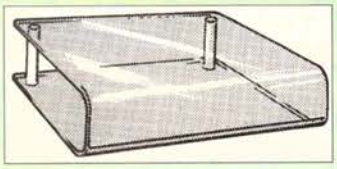
* includes 12 months on site warranty

Professional Printer Stand

The professional printer stand takes hardly more space than your printer. Due to the positioning of the paper feed and re-fold compartments ie. one above the other, the desk space required for your printer functions is effectively halved. Its ergonomic design ensures smooth paper flow and automatic refolding.

80 Column version £16
132 Column version £25

Perspex Printer Stand



Give your Computer System a touch of Class with our elegant, smoke finished Perspex Printer stand.

80 Column version £14
136 Column version £18

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Universal Printer Sharers

Connect up to 4 Micros to 1 printer or 4 Printers to 1 Micro with our combined, Sharer/Changer switch boxes.

Standard Low Cost Sharers

Connects	Serial	Parallel
2 to 1	£8	£9
3 to 1	£11	£12
4 to 1	£15	£16

Professional Sharer Units

Connects	Serial	Parallel
2 to 1	£12	£13
3 to 1	£15	£17
4 to 1	£24	£26

Auto Printer Sharer Switch

Connects	Serial	Centronics
2 to 1	£27	£29
4 to 1	£44	£45
8 to 1	–	£75

256K Multi Spooler

These Parallel Auto printer sharer switches have built-in 256K Buffer.

- 2 In / 2 out **£99**
- 4 In / 2 out **£115**
- 8 In / 1 out **£149**

(Cables for all printer switches are from £5 each please specify the type required when ordering.)

Compact Converter Unit

Serial to Parallel & Parallel to Serial **£32**

Listing Paper

- 1,000 Sheets 9.5" x 11" Fanfold **£7**
- 2,000 Sheets 9.5" x 11" Fanfold **£11**
- 1,000 Sheets 9.5" x 11" NCR 2 Part Fanfold **£21**
- 1,000 Sheets 15" x 11" Fanfold **£9**
- 2,000 Sheets 15" x 11" Fanfold **£16**
- 1,000 Sheets true A4 Fanfold Paper 70gms **£11**
- 2,000 Sheets true A4 Fanfold Paper 70gms **£21**
- 500 Sheets A4 80gms Bond **£3.50**
- 500 Sheets A4 90gms Cartridge for Ink Jet/Laser printers **£9**

(All our Fanfold paper is Micro perforated leaving a smooth clean edge when the tractor feed strips are detached).

Cross Over Manual Switch

2 In/2 Out Parallel	£29
2 In/2 Out Serial	£28
3 In/2 Out Serial	£36

Printer Ribbons & Various Dust Covers

Type	Ribbons	Dust Covers
BBC B/BBC Master	–	£6.00
Archimedes Micro pair	–	£9.00
Citizen 120D	£3.25	£6.00
EX800/1000	£6.00	£6.00
RX/FX80/85/800/MX80	£2.95	–
FX/MX/RX100/1000	£3.95	–
Kaga/Taxan KP810/815	£6.00	£6.00
LQ400/500/550/800/850	£5.50	£6.00
LQ1050/LQ2500	£12.00	£6.00
LX400/800/850	£3.50	£6.00
M1009/GLP	£2.95	£6.00
NEC P2200	£4.50	£6.00

Dust covers for most 80 column printers available at £6 each

Printer Labels

(On continuous fanfold backing sheet)

1,000 90 x 36mm (Single Row)	£4.50
1,000 90 x 36mm (Twin Row)	£4.60
1,000 90 x 49mm (Twin Row)	£4.95
1,000 102 x 36mm (Twin Row)	£4.70

Laser Printer Labels on A4 Sheets

3750 – 70 x 29mm (3 Rows x 10)	£15.50
2400 – 70 x 37mm (3 Rows x 8)	£15.25

Psion Series III

- Series 3 Computer128K **£108**
- Series 3 Computer 256K **£159**

RAM Solid State Discs (SSD)

- 128K **£48**
- 512K **£97**
- 1Mb **£199**

Flash Solid State Disc (SSD)

- 128K **£30**
- 556K **£48**
- 512K **£79**
- 1Mb **£139**
- 2Mb **£199**

Communications

- Parallel Interface Link **£25**
- RS 232 Serial Link for PC **£58**
- RS 232 Serial Link for Mac **£59**

Various

- Mains Adaptor 9V AC **£12**
- Spreadsheet **£59**
- Professional Finance **£42**
- Spelling Checker/Thesaurus **£42**
- Desk Stand **£15**

Commander Joystick

- Connects directly to BBC Analogue port
- Fully compatible with all BBC Joystick controlled games.
- Switchable springs allow selection of floating or centring operation.
- Trim adjusters for both X and Y axes for fine centre adjustment.
- Convenient stick mounted fire button with additional base buttons.

Price: £15

Beeb PC (BASIC)

Designed for program authors to convert BBC programs to run on IBM PCs.

Price: £38

Beeb DOS

Allows IBM PCs/Compatibles to read Acorn format Discs

£39

Watford Catalogue

200 Page full colour catalogue/ Technical Guide now available.

Tel 0582 48 77 77

for your FREE copy

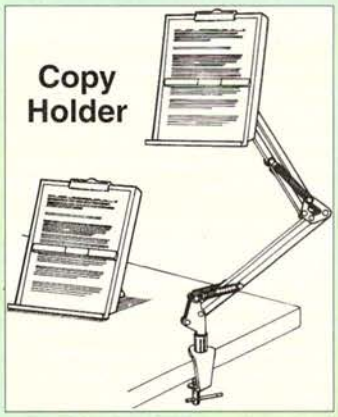
Plotters

- DXY1100 **£650**
- DXY1200 **£835**
- DXY1300 **£1049**
- Sketchmate A4 **£349**
- Sketchmate A3 **£495**
- Roland Plotter Fibre Tip Pens **£7.50**
- HP7440AU **£665**
- HP7475AU **£899**
- HP7570A **£POA**
- HP7575AU **£2529**

Plinths for the BBC Master and A3000

- Single 490 x 310 x 105mm **£14**
- Double 490 x 310 x 210mm **£27**
- A3000 Single Plinth (very sturdy & precision made), has a slot on the left for the switch & cut out on the right for 3.5" Disc Drive **£15**

Copy Holder



Available in 2 full A4 versions, desk resting and shelf clamping. Paper is held firmly by means of a plastic retaining ruler and a clip grip.

- Desk Top **£8;**
- Angle Poise **£12**

NEW

Copy holders as above but with a battery operated, remote controlled cursor/ruler. (By hand or foot pedal.) (Batteries 2 x AA not included.)

- Desk Top **£15;**
- Angle Poise **£20**

Surge Protector Plug

Fitted in place of your normal mains plug, this device protects your equipment (and data from corruption), against mains high voltage translent spikes/surges caused by lightning or thermostats switching.

Protection for only **£8.50**

4 Way Mains Distribution Socket

4 way top quality mains trailing sockets. Supplied wired up with mains plug ready for use. Can be screwed to floor or wall if required.
Very useful for tidying up all the mains leads from your peripherals. **£9.50**

Aries Spike Cleaner Unit

A 4 way mains distribution unit as above with a built-in Surge Arrester, providing protection for your complete Computer/Hi-Fi System **£16**

Continued→ → → → → →

QUEST MOUSE Mk III

- Quest Mouse III & Quest Paint **£39**
- Quest Mouse III, Quest Paint, AMX Stop Press & Pagefont **£59**
- Quest Mouse III only **£25**
- Quest Paint Software only **£23**
- Quest Font Disc (22 Text Fonts) **£15**
- Quest Mouse Mat (Red or Blue or Green please specify) **£3**
- Conquest (Quest Paint Extension) ROM **£24**
- Quest Colour Dump Disc – This new software allows you to print direct from Quest Paint to your Integrex Colour Printer **£18**
  (P.S. Quest Paint is not compatible with BBC Compact)

Quest Paint is the winner of the BBC Acorn User 1990 Award for the Best Art/Graphics software

Mouse Cleaning Kit

To obtain trouble free operation and prolong the life of your mouse, the high tech rodent requires regular cleaning. Our deluxe mouse cleaning kit is ideal for the purpose **£3**

Archi Mouse Port Splitter

Our handy little splitter unit eliminates the risk of damaging your micro due to constant plugging and unplugging of the mouse by allowing you to connect both, a joystick and a mouse simultaneously to your Archimedes. **£10**

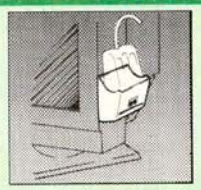
Mk III AMX MOUSE

- **AMX Mouse plus Super Art £39**

(Please specify for BBC, Master or Compact)

- AMX MOUSE ONLY **£25**
- AMX SUPERART Package **£20**
- AMX STOP PRESS – A Desktop publishing software. Works with Keyboard, Joystick or a mouse **£18**
- PAGE-FONTS – Over 20 Fonts for use with AMX Pagemaker **£13**
- AMX DESIGN (ROM) **£23**
- AMX EXTRA EXTRA **£16**
- MOUSE MAT **£3**

WE Mouse House



Treat your mouse to a cosy Mouse House. This handy little gadget solves the problem of where to store your mouse when it is having a rest. Made of sturdy plastic, the WE Mouse House attaches to the side of your computer, monitor, disc drive etc.

Only £3

Award winning Wapping Editor

The Wapping Editor from Watford Electronics represents a breakthrough in Desktop Publishing for the Beeb. The package includes a 64K ROM containing ALL the software needed to get into print fast; a very sophisticated graphics module, professional quality typesetting software, a word processor, a comprehensive font editor for designing your own typefaces, and a variety of printer dumps. This mouse-driven system is designed for the BBC B, the B+ and Master computers and will take full advantage of any Sideways and Shadow RAM that may be fitted. It will run under DFS, ADFS and Network filing systems and requires as a minimum just a single 40 track drive.

Wapping Editor Software Pack £39
Wapping Editor plus Mouse £59

(Wapping Editor only works with Master Compact if a Mertec Expansion box is fitted)

Wapping Art Disc

Over 250K of clip art to cut and paste into your Wapping Editor pages. Pictures include maps, transport, people, media, sport, games etc. Two 'ratio' screens for use with hi-res and rotated A5 pages to ensure images are not distorted when printed out. **£15**

Wapping Font Disc 1

Sixteen additional fonts, including smaller version of Oberon and Daisy and two new sizes of the standard font for the Wapping editor.
Also included are two Mode 0 screens containing giant 'headline' fonts to cut and paste to create extra smooth headlines.
Supplied complete with instructions. **£12**

Wapping Font Disc 2

This new addition to our Wapping range of DTP software provides you with additional 23 fonts for the Wapping Editor DTP pack. (80 track discs only). **£13**

32K Shadow Ram Expansion Card

A MUST FOR WORD PROCESSING

Simply plug the ribbon cable plug into the 6502 socket and gain a massive 32K of extra RAM.

- "VIEW" Wordprocessor users can now type in letters in 80 columns and have up to 28K bytes free – 5 times as much as normal.
- In WORDWISE (or WORDWISE-PLUS), preview in 80 columns with the full 24k of text in memory. This product is recommended as an ideal complement by Computer Concepts.

Only £45

ROM Cartridges for the BBC Master

Will accept the larger Piggy Back ROMs like Interword, Quest, etc.

• Twin **£9;** • Quad **£14**

ROM/RAM Card

- No Soldering required to fit the board.
- Compatible with BBC B
- Total number of ROMs increased from 4 to 8.
- Up to 8 banks of sideways RAM (dynamic).

PRICES:

- ROM/RAM card with 32k DRAM **£39**
- ROM/RAM card with 64k DRAM **£52**
- ROM/RAM card with 128k DRAM **£83**

OPTIONAL EXTRAS:

- 16k plug-in Static RAM kit **£8**
- 16k DRAM for Upgrade **£13**
- Battery backup **£3**
- Read and Write protect switches **£2 each**

Complete ROM-RAM card with all options fitted **£99**

Sideways ROM ZIF Socket System

Allows you to change your ROMs quickly and efficiently, without having to open the lid. The ZIF socket is located into the ROM Cartridge's position. It is very simple to install. No soldering required. Also included in the price is a plastic see through storage case with antistatic lining, which allows you to store 12 ROMs. **£18**

Spares for BBC Micro

UHF Modulator			£4
Speaker	£3;	Speaker Grill	£1
Keyswitches			£1
16MHz Crystal			£2
17.734 MHz Crystal			£2
32.768MHz Crystal			£2
Replacement 17 way Flexible Keyboard Connector			£4
BBC Master Power Supply			£69
BBC Master Keyboard			£62
BBC Master Casing			£49
Refurbished BBC B Spares			
BBC B Casing			£13
Clear Perspex Keystrip Holder			£3
BBC B Keyboard			£35
BBC B Power Supply			£49

User Port Splitter Unit

Gone are the days when you had to plug and unplug devices from the User Port. This extremely useful little device allows you to connect two devices simultaneously to the BBC B & Master user port.

Excellent Value at **£22**

Solderless Sideways ROM Socket Board

- Increases your BBC Micro's ROM capacity from 4 to 16.
- **No soldering required.**
- Socket 14 takes two 6264 RAM chips.
- Read protect to make RAM "Vanish" allows recovery from ROM crashes.
- Battery backup option for RAM chips.
- Supplied ready to fit with comprehensive instructions.

Price: Only £32
Battery Backup fitted **£35**
Battery Backup only **£3**
16K Sideways RAM **£8**

- Sideways RAM Utilities Disc for Solderless ROM Board. Includes the options to load and save ROM Images and the facility to use Sideways RAM as Printer Buffer. **Only: £8**

Watford DATA DUCK

Convert two single Disc Drives into one Dual Drive with this simple external unit (Suitable for Disc Drives with PSU. For Disc Drives without PSU, you will also require Watford Power Duck, see below). **£14**

Watford POWER DUCK £8

- Official orders accepted from government, educational establishments and PLCs.
- Shop Hours: 9am to 6pm, Monday to Saturday. Late night Thursday until 8pm. Free customer car park.
- Mail Order Inquiries: 9am to 6pm. Monday to Friday only
- Technical Inquiries: 9.30am to 5.00pm, Monday to Friday

Carriage (incl. Insurance) Charges		
	1st Item	2nd & Sub-sequent Item
Software	£6.00	£2.00
Hardware	£7.00	£5.00
Lasers	£9.00	£7.00
Accessories	£5.00	£2.00
Small Items	£4.00	£2.00

P.S. Many software packages qualify for the small item tariff

For Next Day Working Day delivery service simply double the cost. All charges subject to VAT

Above carriage charges apply to UK mainland only. On export orders, carriage is charged at cost.

Watford Electronics Ltd

Established 1972

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Offers and all items are subject to availability. Prices may have to change for reasons beyond our control. Specifications on products are correct at the time of going to press and given in good faith, but may have to change without notice. Please check suitability of peripherals with your system/s, before ordering. All trademarks are acknowledged. Goods are sold subject to our standard terms and conditions of sale and are available on request. GOODS ARE NOT SOLD ON TRIAL BASIS. E&OE.
VAT: UK and EC customers: Please add 17.5% VAT to the total cost, including carriage.

Watford Electronics Hands-on Open Day

Sponsored by Computer Shopper, PC Direct and Acorn Computing

Watford Electronics Hands-on Open Day Sunday 3rd October 1993 from 10am - 5pm Make a date in your diary

Don't forget,

if you want to buy on the day,

you can !

Aries

Come along and see the best in computer hardware and software from some of the biggest and best names in the world

Participating Companies include

Acorn Computers
Advanced Micro Devices (AMD)
Aries – Perfecta PCs etc
Canon – Printers
Corel – Corel Draw !
Epson – Printers
HP – Vectras, Printers
iOmega – Tape backup
Logitech – Senseware
Lotus – Software
Microsoft – Software
NEC – Multimedia
Pace – Fax modems
Star – Printers
Taxan – Monitors

All events and participating companies subject to change without notice.

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Multimedia
Instant Finance
Editorial Staff
Q & A Sessions

All this and **free refreshments** too

How to find us

Exit from the M1 Junction 11 and turn towards Luton following the signs. Head towards Luton and at the first roundabout turn right.
Carry on past the 'Do-it-All' store on the left, up to the next roundabout. Take the road straight ahead – and you are now on Dallow Road. Follow it round to the left and carry on for half a mile. Watch out for 'Bestway' on your left, and the next turning left is Finway – you're here.

Watford Electronics
Jessa House
Finway
Dallow Road
LUTON LU1 1TR
Tel 0582 487777 Fax 0582 488588

Gateway to the stars

Mike Cook lets you into the secret of the computer-guided telescope

ONE of the great things about my job is that I get to indulge my passion for electronics and computing. With this project I also get to include my other great interest, astronomy.

This project has been a long time in the making, in fact I started over three years ago but it soon had to be shelved due to lack of physical space in my workshop. With my move of address about a year ago I finally had the space to sort this one out. What I want to describe to you over the next few months is a project to make a computer-guided telescope.

Everyone knows that the sun rises and sets each day, but so do the moon, stars and all the planets. Not many people notice the stars moving at night, the exception being those with telescopes and those who have drunk vast amounts of alcohol. So as the stars move through the sky it is not too easy to point a telescope in the correct direction to see something that is too faint to see with the naked eye.

Searching the skies

Just how do you aim the telescope? Well, astronomy is an ancient art and there are techniques to find your way around the sky. One technique is known as *star hopping*, leading the viewer from a prominent star to a less prominent one and so on until you are in the region of interest. The problem with this is it takes a good deal of familiarity with the night sky in order for it to work.

Another solution is to use *setting circles*. The base of the telescope is tilted until it is at an angle equal to the observer's latitude and it is aligned to point due north. This is known as an *equatorial mount* and is fitted on a lot of quality telescopes. Then just by rotating the telescope in one axis a star can be tracked from rise to fall.

The telescope's axis is labelled so that the angle it is pointing at can be read off. This is known as a setting circle. Now any point in the sky will have two angles associated with it. The up and down or *declination* is the same all night for any one star. The round and round angle or *right ascension* will change as the star moves across the sky. It is a simple matter to calculate what angle to use for any one star.

To simplify this even further, some telescopes have a motor that will automatically turn it at the same rate as the star moves. In this way the setting circles can read off the star's absolute position in the sky, or equatorial coordinate irrespective of its apparent position or horizon coordinate.

Enter the computer

So, you might ask, with this sort of a system, is there any need to involve a computer? Well, the problem with an equatorial mount is that it has to be set up precisely in line with the axis of the earth. This means the angle of tilt of the base has to be correct and it has to be aligned precisely north.

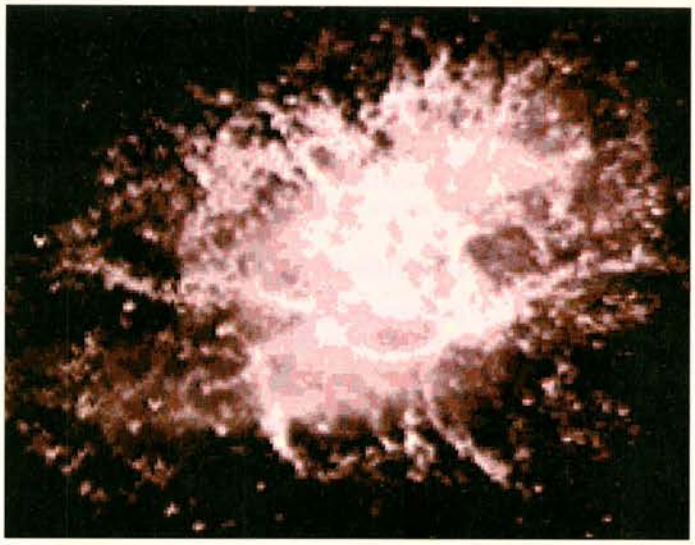
You can get an approximation to north using Polaris the pole star, but this is not precisely at the north point. Similarly it is difficult to align the tilt to within more than a degree. Finally, the setting circles are rather like protractors and it is difficult to measure to better than a degree.

What I originally investigated was whether the computer could sense the angle of the two axes of the telescope and work out precisely where in the sky it was pointing. It would do this by you pointing at two known calibration stars so it would know what angle corresponded to which equatorial coordinate.

This would remove the need to align the telescope. In fact, it would work with whatever sort of telescope mount you had. You could even program in the equatorial coordinates of an object you were interested in, like a galaxy or nebular, and the computer could guide you to turn the telescope in the correct direction.

You can even set up your telescope during the day. If you

● *Waiting to be discovered are the Horsehead...*



...and Crab nebulas

know where to point it several planets and about 20 of the brightest stars are visible under a clear sky.

There are many different ways to tackle such a project. An obvious starting point was to consider how you could sense the angle of the telescope.

Putting it to the test

You need as high a precision as you can get, so that really leaves only one candidate – an optical shaft encoder.

This is what you have inside a mouse. The mouse ball drives a shaft and that is attached to a disk which has slots in it that are detected by a photo-sensor. The ensuing pulses are counted by the computer to determine the position of the pointer on screen.

A mouse is is technically known as a *closed loop system*. You move the mouse, the pointer moves on the screen, you see the pointer and move the mouse to where you want it.

I am sure that you have seen those little desktop jokes that add a little extra movement to the mouse making it more difficult to drive – more difficult, but not impossible, because of the feedback and closed loop nature of the control. In practice this means that it is not very important if your computer misses the odd pulse from the mouse as you will compensate for it and never realise.

Now my telescope is an *open loop system*, each pulse means it has moved a little. Miss a pulse and it is forever in error, therefore we can't rely on the mouse input of the computer. This leaves two choices: Look at the optical shaft encoder with software on a serial or parallel port or have dedicated hardware count the pulses.

This solution is initially attractive so let's explore it. With a parallel port we need to be close to the computer, and as stars are best seen from outside your house this means having a portable. Alas my financial resources do not stretch to an A4.

Never mind, let's look at serial monitoring – simply send the state of the optical shaft encoders output down the serial port. However, the success of this depends on several factors.

Losing accuracy?

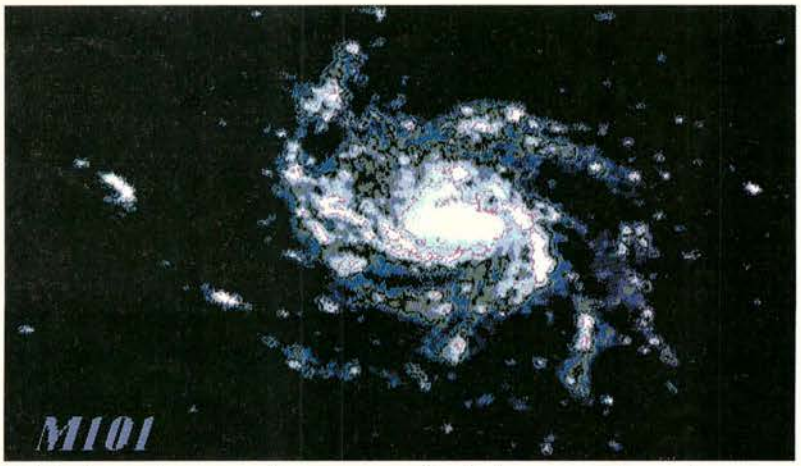
First of all, the more accurately you measure the telescope's angle the better, but the more pulses you generate. Secondly you are limited, with a serial port, to the rate you can transfer data. Therefore, if we move the telescope faster than we can get the pulses down the line, we will lose some and so lose accuracy.

Let's do a quick calculation. Suppose we are running a serial link at 19,000 baud – about the top speed most computers can handle. This would consist of 1 start bit 8 data bits and 1 stop bits making 10 bits in all. Therefore, we can get 19,000 / 10 = 1,900 position indications per second.

Suppose our telescope angle is being monitored to 1/30th of a degree to the nearest two minutes of arc – that gives us 360 x 30 = 10,800 pulses per revolution. This means the fastest we can turn the telescope is in 10,800/1,900 = 5.7 seconds. Add to this the problem that you have two axes to monitor and this doubles the time to 11.4 seconds.

From my point of view this was

> You need as high a precision as you can get, so that really leaves only one candidate – an optical shaft encoder



● *Galaxies can have romantic names as well as their more mundane references*

➤

➤
too slow for normal use, I wanted to be able to slew the telescope exactly as I had done before. You could reduce the resolution of the optical shaft encoder but this would reduce the effectiveness of the whole project.

The hardware solution

That leaves the option of using hardware to count the pulses. However, the problem is that you can count the pulses fast enough but you need a wide interface to read the counters. This requires a parallel interface and I have already said I did not have a portable computer. You can't use a parallel interface over a long distance because the logic signals get lost.

My compromise was to use a small counter to record the pulses and send the count as fast as I could down the serial port. As the serial line is 8 bits wide I could devote 4 bits to each axis.

This meant I could have up to 16 counts of each axis between sending serial bytes without losing any information. In other words I could move the telescope 16 times faster than the previous calculation. This proved fast enough to cope with any rapid movement I could make.

Having got the telescope axis angle into the computer we need to do some calculations and display the results. Again a portable computer would be ideal or one with a large display viewed through a window.

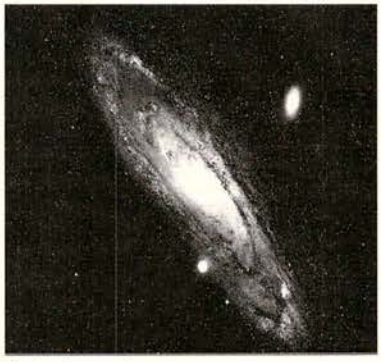
I investigated taking a serial lead from the telescope to the computer and thought it would be a good idea if the computer sent back its information to the telescope. This scheme would have the added advantage of being able to be used with a portable – if I can persuade my wife to let me buy one – from a site that has no mains supply.

Another important aspect is *dark adaptive vision* – the longer you stay in the dark the more sensitive your eyes become, reaching maximum sensitivity after about half an hour. It only takes a second of bright light to wipe out that adaptation.

Fortunately, red light does not affect dark adaptive vision so I could make the display from red LEDs. In a trade catalogue I found some dot matrix displays that had a four character display. They simply accept Ascii characters on a parallel interface – two of these would be fine for the position display.

They had the additional advantage of being able to display letters as well as numbers so I could send other information. Finally their brightness could be controlled by software, so minimising the threat to dark vision. In the design of the display I found I had some extra control bits so I used these for an LED indicator and an audio clicker.

● *Looking into the far distance at a spiral galaxy*



● *Andromeda – our nearest neighbouring galaxy*

System overview

Finally we have arrived at the overall view of the system shown in Figure I – a small box of electronics connected to shaft encoders at the telescope. This records the counts from the encoders and sends the information serially to the computer.

The computer processes the information and sends the position back to the display. In addition the display may be used to communicate with the computer – choosing an object to view, setting the display brightness or calibrating the system.

It also has the advantage of being able to use any computer from the humble model B to the newest RISC OS machine.

The design is modular, that means you can choose how much or little you would like to implement on your system.

● *Next month we will get down to the detailed electronic design of the axis position indicator.*

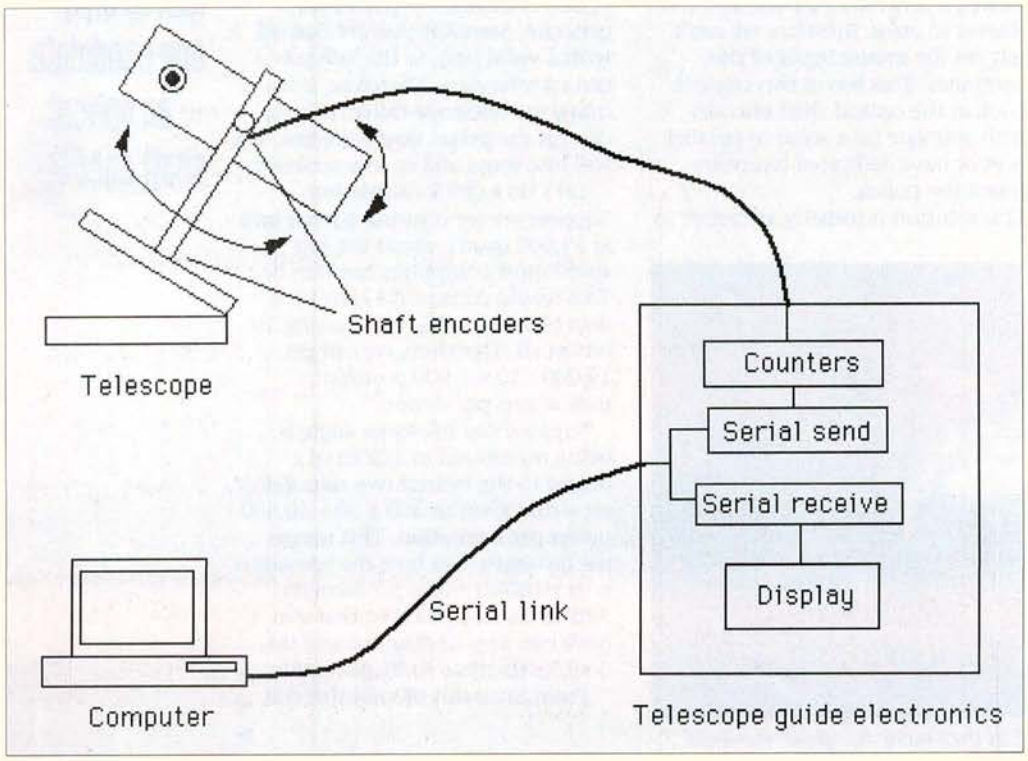
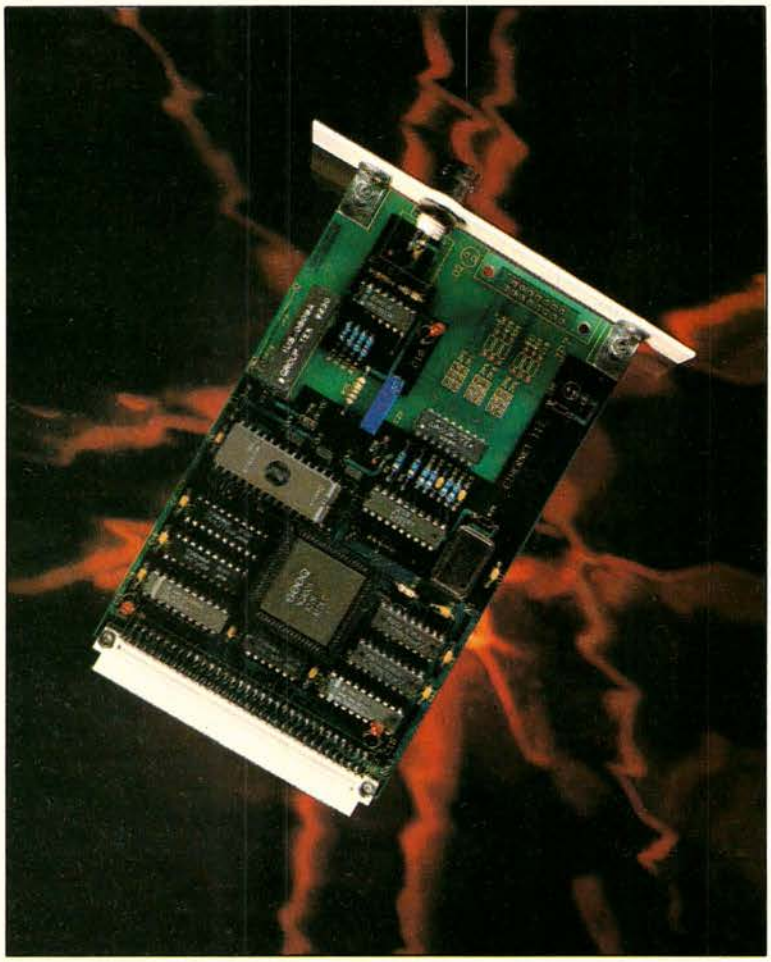


Figure 1: The block diagram of the system



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Witles

THIS is the final piece of help towards solving *The Price of Magik*. As promised, I shall give a full list of the spells, their effects and focuses and where they can be found.

We'll start with the DET spell which makes the bat in the belfry cooperative. Its focus is the cross found in the herb garden and the bat is useful for chasing away the bloodworm in the river tunnel as well as for getting the wheel in the misty corridor once you have hypnotised it.

HYP uses the Staff as a focus which is obtained by cutting the vine I used to climb into the house. Casting HYP at a target means it will obey you so I had trouble with the bat until I peeped at a hint.

MAD is found on the table in the office and its focus is the grimoire in the library. It will make the target mad for a while, enabling the use of harder spells – if you choose the right target, that is.

Next is ZAP which is revealed after some examination of the wargame in the table room. Its focus is the ashes created by setting fire to the woodpile in the woodshed – using it means that you can strike your target with lightning.

SEE lets you detect hidden doors and lurks in the laboratory near the collapsing junction. For a focus you'll need the feldspar in the inner sanctum also close to the collapsing junction.

To put fear into your opponent you'll need IBM – what's Big Blue been up to lately? – and this is located in the middle of Stonehenge. To get there you have to activate the picture in the rock-walled room using BOM.

This spell is in the grandmother clock if you hang around a bit and has the trumpet as a focus which is held by the cherub in the hall of statues. You need to wake the cherub with the spell.

If you are in a combat situation KIL can be useful as it induces berserker characteristics. You can learn it by visiting the wargame I mentioned earlier but make sure you are well armoured before venturing there.

DOW returns you to the Grandmother Clock as its focus is the pendulum. This is useful as it tells you if an object has Magikal properties.

If you face an armoured creature, you can turn the tables by using FIN – accessed by giving the golem something comfy to wear such as the robes from the wardrobe, then the silver mail, the spell's focus, is all yours. Your enemy will then turn into a fish.

Our old friend, the Valerian, is in

Loony largesse

Your primary task in **Fish** has been completed with the successful assembly of the Focus Wheel, which now resides safely in the glass box. Now it is time to get going properly – the first two sections were by way of a warm-up.

You are faced with one warp only – the large one, so into it you go. As you do this, you metamorphose into Dr. Roach – half man and half fish – and find yourself in his lounge, a small but pretentious place, with a trendy black shelf as part of the furniture. On it, you'll find that most valuable of personal organisers for the busy executive – a Fishofax. Inside this are two important items. One is a tatty identity card, to remind you who you are and a Fisa card to allow you unlimited – well, almost – purchasing power.

Meanwhile, your secretary will have told you that you are booked in for a meeting at 10.00 with the principal of the Opah university – a strong hint that a move counter is lurking in the background.

One other item of furniture in Dr. Roach's office is a fishton. A what? It's a fishy bed, well, more of a sofa really. A search of that will allow you to discover a travel pass. You are now fully kitted up for starting this section of the adventure.

The door leading out of the office is operated electronically when you put your hand on the silver hand print by the door. So, turn off the lights like a good thingy and position your hand. You can now go out into the corridor. Don't bother with your neighbour's door or Bertie Bream, but make your way out again to the apartment block lobby.

Continue out into the street and – while you experience a quiver of fear as a police vehicle passes by – make your way East to Paddlington Station where the rush hour is in full flood.

Go down to the platform and into a train the moment it arrives. Wait in the train while it passes Barbellican ignoring the pushy pike, but leave the moment you are at Pickerel.

Going up to the station, you next move southeast to the Plaza – a shopping area where you'll be pretty busy equipping yourself for further forays. North takes you into a clothing store where a tie and a pair of sunspecs are for sale. Snap them up and put them on.

South twice will take you into The Hook Line and Sinker – a nice traditional pub where the bar is clean and the customers are filthy. There's a drunk here who needs to be plied with snifters. Once you have oiled Dr. Salmon enough, you can persuade him to give you his ID card. At the same time you also need to take the opportunity to buy a cylinder of gas for 99 clams. It's immediately snatched by one of the baddies – and that's where we'll leave you for now.

s but winning

For the Elite

I promised to announce in this issue of the column the name of the person who had won the small competition to see who could complete the Arries-Diquer journey in the shortest number of light years and it attracted a good number of entries. The prize was to be a specially inscribed sweatshirt, kindly donated by Hybrid the software house who published ArcElite.

Well the sweatshirt is now being modelled by one Commander James (Chronon) Taylor of London W6. James picked up an undocumented feature of ArcElite – whether by accident or design, I don't know – which means that your departure point when making a Galactic Hyperspace jump is absolutely critical. He also cleverly noticed that you can buy a Galactic Hyperspace drive in ArcElite at planets which are tech level 9 rather than 10 as in Elite.

Your departure point can make, literally, a world of difference as to where you emerge. Clive Gringras told me that, if you choose unwisely, you can end up in a new galaxy isolated in a star cluster where you will not be able to purchase a new Galactic Hyperspace drive.

You are then stuck unless you have taken the precaution of saving your position prior to making the Galactic Hyperspace jump. I advised the precaution some time ago though, being of a nasty disposition, I didn't say why. Now you know.

Here is Commander Chronon's route:

At	Action
Arries	G.H. to Sogeve
Sogeve	jump 4.4 to Beisria
Beisria	buy a drive and G.H. to Biante
Biante	buy a drive and jump 0.7 to Erbierso
Erbierso	G.H. to Enuserin
Enuserin	buy a G.H. and jump 3.6 to Tileer
Tileer	G.H. to Direbea
Direbea	buy a drive and G.H. to Xeatrien
Xeatrien	buy a drive and G.H. to Erzara
Erzara	jump 1.2 to Veerbidi
Veerbidi	buy a drive and G.H. to Ororqu
Ororqu	buy a drive and jump 2.5 to Diquer

And there you have it.

Commander Chronon certainly knows his way around Elite and ArcElite and he has some useful comments about antisocial sidewinders – a matter raise by Alan Medcroft.

Please note that all ships that indulge in formation flying – except for Pythons – are buddies: One for all and all for one. Belt one and they'll all belt you. You'll notice that colliding with a ship is not normally regarded as an aggressive act. Smash into a ship and the others won't get uptight – you won't get a kill point, either.

Sidewinders are different, though – they would be, wouldn't they? Whatever way an escorted ship is wiped out of existence, the Sidewinders are going to blame somebody and that somebody is you.

To complete this philosophical commentary on life in this cruel universe, please note that if an escorted ship disappears from view before the bodyguards do, they will decide it's all your fault too. Sidewinders then get all wound up and come after your blood in high dudgeon. Don't forget it's an offence to obliterate wound up Sidewinders. Take care.

the roof garden and is the focus for a healing spell – FIX.

This can be learnt by finding the tapestry close to the bone room. But you will have to wake it up, though.

The crystal ball is the focus for ESP. For Tolkein fans, it's a type of palantir, enabling you to look ahead. Look for the cold store and the front door. However, if you want to make something – including you – float in the air, you'll need FLY. Find the broom east of the entrance hall and go north and northwest from the library to learn it.

I've mentioned ZEN before. Cut a chunk from the mirror in the attic with the diamond ring and go to the desk in the study and examine the parchment – this is your teleportation device.

The prism in the recess behind the mirror is the focus for XAM and tells you what magic properties the target has.

The candle from the woodshed is the focus for SPY learnt by visiting the statue past the slug. Don't forget your salt and – once you have obtained the ash – blow the candle out.

Now to the two spells for sorting out Myglar. DED's focus is the wheel near the bat. You can learn this one by visiting an altar and creating a no-go zone for magic. SAN has the claw as a focus and to get it you have to cast IBM at the Dark Spawn which is found by waking the picture north of the red room.

You learn SAN by looking at the plaque which can be found once you have made yourself a fish – as outlined earlier – while you're in the boat. Finally, to open the door in the stone room, cast ESP beyond it, followed by BOM at the idol, ESP again then HYP to control the Idol. Cast ESP one final time and tell the idol to open the door.

And that's your lot: Next time I shall use this space to catch up on the mountain of correspondence on Elite.

Adventure workshop

Two readers have reported that the *RMKill SharedCLibrary tip I passed on a while back has not worked for them where the Magnetic Scrolls adventure **Wonderland** is concerned now that they have installed Risc OS 3.1 on their machines.

In each case the machine was an A3000 or A3010 where Risc OS 2.0 had previously given no problems. If anyone can offer help, I shall be glad to pass it on to them.

The next problem concerns a Master Compact running **Elite** David Aston says that, once in flight, if he has (say) Cr 20 free cash left and blasts a baddie or an asteroid for Cr 12 or whatever, instead of being shown Cr 32 as his new balance he has just the measly Cr 12.

Superior have assured him that the programme is Okay, so has anyone else with a Master Compact had similar troubles? My guess is that a chip dealing with incrementation is on the verge of frying.

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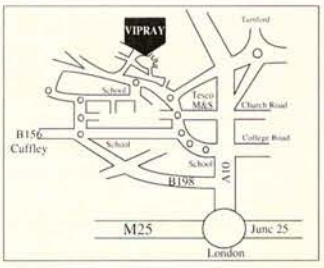

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Virus confusion

SINCE beginning to redevelop Richard Lloyd's !VKiller, I have come across several interesting pieces of information that serve to highlight the widespread confusion about viruses.

The misconception that a virus is akin to a *recurring illness* – that once deleted, it may reappear again – is obviously not the case or we, the writers of virus killing software, wouldn't be doing a very good job.

Unless you are reinfected from another source, a virus is gone for good once it has been deleted – it *is* just a computer program. Another problem is the tendency to overestimate the damage that a virus can do. By this I mean that some people have the idea that viruses can do things that are impossibilities, like physically damaging disks.

Naturally, we who are sane enough to buy Acorn equipment wish to avoid the mass hysteria and paranoia that is currently in evidence on the Amiga and PC markets. Until we are all virus literate, we should be careful not just to understate but also not to overstate the potential of viruses. – **David Seery, Littleborough**

● *Virus killers are only as good as their last update – as we discovered ourselves when the original !VKiller failed to recognise the Module virus.*

We're quite lucky in the Acorn market having a centralised virus detection and removal system in Pineapple's !Killer system. A recent incident highlights this when a new virus appeared in Exeter schools and, apparently, was isolated and permanently removed due to the swift action of !Killer's author, Alan Glover, and the school staff that sent him a copy of the virus.

Disk explanation

I AM a subscriber to *Acorn Computing* and have a query on the content of the magazine. In the February and April 1993 issues, there were two pages to explain how to use the Subscriber Special 32-bit disk and similar pages for the BBC disk.

From the May 1993 issue onwards, there only appears to have been pages for the Subscriber Special BBC Disk, without the explanation of how to use the Subscriber Special 32-bit disk.

Like many Archimedes users, I feel extremely frustrated when left without instructions as to how to use the subscription disk that comes with my magazine. – **Timothy Chan, Northwood**

● *You're absolutely right, and we'l correct the problem from next issue.*

8-bit video

I AM certain that there are still many 8-bit computer users like myself, who cannot afford to upgrade to a new machine. I am particularly interested in generating titles for my video camera so I am forced to use my Master 128.

At first, I filmed directly from the monitor screen but this was not always good because of the loss and smearing of the colours. Many of the video camera magazines advertised title generating programs for the Amiga and PC but these and genlock cards were too expensive.

Fortunately, last January, I found a device for under £50 called VideoMaster, produced by CampurSoft. It was originally made for an Amiga so the company were concerned that it would not function correctly on my BBC Micro and allowed me to test it.

The results were very satisfactory and it is possible to record any computer generated screen – even action graphics such as gameplay. It would be very nice to have some programs in the to help generate screen graphics for use as video titles. – **J. Darlington, Southampton**

● *There was a program called Caption in the May 1989 issue of* The Micro User, *that created video caption on the BBC Micro. For any other BBC Micro owner who's interested the full address of CampurSoft is 16 Slatefield Street, Gallowgate, Glasgow G31 1UA.*

DIY joy

THANK you very much for the joystick article in the August 1993 issue of *Acorn Computing*. It is refreshing to see that magazines such as yours continue to provide food for thought for readers who are interested in do-it-yourself expansions to their computers.

However, I would like to raise a couple of points about the joystick circuit:

Firstly, from my experience of producing commercial add-ons for the Electron and private ones for the A3000, care needs to be taken with the chip selects of bus driving chips.

The line labelled *chip select* is derived from the decoded address lines and has no guaranteed timing reference to other signals. Using it on its own, as in the published circuit, can and does lead to timing clashes with third-party add-ons and crashes the computer.

To overcome the problem, the

Monopoly and bankruptcy

THE last time I was in a Virgin Games Store I made some comment to the manager regarding the lack of any Archimedes software. He replied: "If I could get hold of it, I would be only too happy to stock it".

So what's wrong? Who has the monopoly in the market? A little more customer-producer availability might help, and Acorn computers would then be less likely to be dismissed as only education machines.

I have an old Archimedes A310, upgraded considerably but much appreciated for its ease of use. I have recently had an expensive Aleph One PC card fitted, expecting to be able to get a high density disk drive, but Arxe Systems have gone out of business. So my Archimedes cannot provide business software, such as WordPerfect, compatibility for my daughter to complete her Business Studies at college. – **Mrs Jean Higlem, Manchester**

● *The problem of High Street distribution of Acorn software should soon be solved, at least as far as games are concerned, with the entry of Centresoft into the Acorn arena.*

This company distribute Amiga software to the High Street and are now starting to take on some Acorn software.

It does appear that Arxe have ceased trading although we've had no official confirmation of this. Perhaps the person developing the replacement high density drive will be taken up by another company.

chip select should be mixed with the processor clock – which is also available on the serial chip socket – before connection to the buffer.

The other point that I would like to make is that, in my opinion, home users would be more likely to have the serial interface already installed than the Econet module. I certainly have no use for the Econet module and have therefore fitted my joystick interface into its unused space, modifying the address used by the software to take account of this.

The system works very well and my children are getting hours of fun using the joystick with some of the games from your MegaDisks. – **John Wike, Caerphilly**

Ethical considerations

I AM the IT coordinator at Tilbury Primary School in Hull and have recently received advertisements and catalogues from two different companies without requesting them.

Both these companies from the Northampton area offer disks of Acorn software for either £3.50 + £1 delivery or £3.99 + £1.50 delivery and have obviously directed their marketing at schools.

I have studied both catalogues and it appears to me that both the companies are offering widely available PD software at about two to three times the price of the well known PD libraries.

It seems that both companies, through admittedly clever marketing, may be taking advantage of schools that do not know that many of the programs available may cost less than £1 from other sources. In these days of tight budgets in schools, such a situation is not helpful.

Two further points I must note are the fact that PD authors may feel that this is an abuse of their trust by distributors and reconsider the status of their software.

Also, I object to the *rider* which both companies include to make it clear that support for the software, should it prove problematic, will not be provided.

Despite their refund option for faulty disks, many of the cheaper public domain libraries offer far more than this.

I do realise that all this is completely legal, but feel that there is an ethical question here, about which I would be interested to hear any other readers' views. – **John Bennet, Hull.**

BBC/PC connectivity

I'D LIKE to add some information to one of Mike Cook's Problem Solved answers in the July issue of *Acorn Computing*:

There is a PC software package called BeebDOS from MicroBoss which will allows a PC to read and write BBC Micro disks and it supports many BBC Micro disk formats including DFS, DDFS and ADFS.

The program is available directly from MicroBoss or from Watford Electronics. – **Roland Young, MicroBoss, 3 Hadleigh Road, Frinton-on-Sea, Essex CO13 9HG. Tel: 0255 671095.**

In my view

YOUR questionnaire is an excellent idea, very neat and simple. However, I am not too keen on the idea of losing another disk. Surely it would be a better idea to have the facility of a print out as many users have printers and this is easier and cheaper to send.

I am pleased to see that the regular games feature will be returning. I was also hoping you would reintroduce the rating system on your games reviews – the education pages have one why not the games pages? Although your last rating system was appalling perhaps using percentages for each factor would be better.

For those of us on a tight budget a game is a big expenditure and we are often faced with a hard decision between a selection of software. A rating system helps greatly with this decision.

I also feel that this would help to bring some continuity between your reviewers. Some of your reviews recently have been very vague and weak. Some ruthlessness is needed. If a game is rubbish say so.

Although the Arc games should really only be compared to the competition on the Arc it would be interesting to see what would happen if some of these were released on to other formats. What would *PC Format* say about Humanoids and Robotix – none too complementary, me thinks.

No one could be a stronger supporter of the Arc than myself, but the only way to improve its credibility is to discourage companies from releasing useless games. Sharper reviews would be a step in the right direction. – **Chris Hinds, Camberley, Surrey**

● *The idea of the questionnaire on the disk was to make it easier to fill in without resorting to photocopying or tearing out pages from the magazine. Plus we have a program called !Ansors which automatically correlates the answers which speeds things up no end. This means we can tailor the magazine to suit you, the reader, much more quickly and effectively.*

The education reviews are not rated as such but are rather a guide as to whether the software is best used in school or home. A rating system for education would have to be extremely extensive to be fair.

Reviews are, by their very nature, personal and the views of the writer are best read rather than giving a cursory glance to percentages. If a product is truly rubbish we don't waste space on it.

You may not personally like Humanoids and Robotics and we considered the package overpriced but some people want that type of game – it's all a matter of taste – and I have seen games costing more with about as much gameplay on the PC. Pretty graphics alone don't make a good game.

No joy at all?

I use my A3010 for playing games mostly and I'm still surprised at the number of games that don't use joysticks – even though the A3010, which has the built-in joystick port, has been around for over eight months.

Could you please try to fit in a page somewhere that lists the games that work with joysticks so that we'd know which ones to buy? I'm sure it would encourage people to buy games if they knew, and I know I'd prefer to get games that didn't need keyboard bashing. – **Dave Everitt, Tavistock, Devon**

● *It takes time for standards to seep into the consciousness of games programmers – a notoriously individualistic bunch – and when Acorn issued their standard Joystick module it was completely ignored at first. However, the situation is changing and 90 per cent of new games do permit joystick control.*

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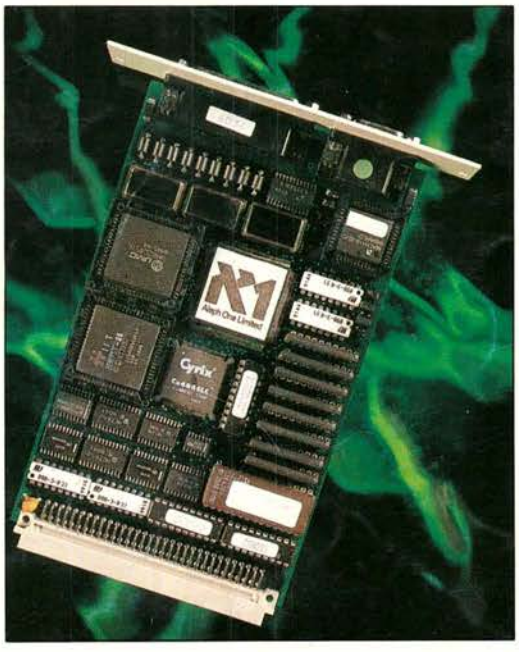

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